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ABSTRACT

An instructor's manual and student activity guide on brick masonry II are provided in this set of prevocational education materials which focuses on the vocational area of trade and industry. (This set of materials is one of ninety-two prevocational education sets arranged around a cluster of seven vocational offerings: agriculture, home economics, distributive education, health occupations, world of work, trade and industry, and office occupations.) The instructor's guide is organized into the following elements: title of activity, duration of activity (six to nine periods), activity goals, seventeen instructional objectives, related vocational clusters, and activity implementation (description, safety precautions, materials needed, teacher preparation prior to class, during the class, follow-up activities, answer key to student check point activities, and masters for duplication). The student activity guide provides step-by-step instructions (narrative and illustrations) for completing each instructional objective. At the end of each set of instructions is a student check point (evaluation activity). Occupational descriptions for a bricklayer supervisor (construction), bricklayer (brick and tile), bricklayer (construction), and firebrick and refractory tile bricklayer (construction) conclude the document. (JH)

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ED169369

T&I – BRICK MASONRY II

Kit No. 80

INSTRUCTOR'S MANUAL

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In Cooperation With

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1978

CE 020 554

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TITLE OF ACTIVITY

Kit No. 80, T&I – Brick Masonry II

DURATION

Main Activity: 5 – 7 class periods
Follow-up Activity: 1 – 2 class periods

GOALS

The student is introduced to the skills of the masonry trade. To become familiar with the trade the student must learn the tools and their uses. The student should also become familiar with certain terms related to the trade known as "the language of the trade."

INSTRUCTIONAL OBJECTIVES

Given a list of general tools the student will identify the purpose of these tools.

Given a list of handtools the student will identify tools by name.

The student will identify the five parts of a trowel.

The student will define the terms used in masonry.

The student will prepare area for work.

The student will mix practice mortar.

The student will spread a trowel full of mortar. The trowel must be held properly before gathering mortar onto it. A full trowel of mortar should be picked up to spread properly.

Each pair of students will locate two corners for a brick wall.

Each student will spread a bed of mortar.

Each student will set a brick in the corner of the wall.

Each student will set the mortar on the trowel for buttering a brick.

Each student will properly butter a brick.

Each student will build a corner five courses high.

The student will attach a mason line to a line block.

With one line block already attached to the line, the student will stretch the line and attach the second line block to the line at the proper place and hang the line on the top of the first course of brick.

Each student will construct a running bond wall section five courses high.

The student will operate the concave jointer correctly.

VOCATIONAL CLUSTERS

Related trades are math, and blueprint reading; other vocational trades such as carpentry, electricity, etc, are also related.

ACTIVITY IMPLEMENTATION

A. Description

The purpose of this activity is to allow students to become acquainted with the skills and knowledge of the masonry trade. The students will learn how to make mortar by using hydrated lime and sand for a practice mortar. The students will learn to use the trowel, brickhammer, brick set, and jointer by building two corners and joining them with a running bond wall section five courses high.

B. Safety

Be careful when mixing mortar. The lime is a very fine powder and could cause a very dusty atmosphere.

C. Materials

1. Audio Visual Equipment
   None
2. Technical Equipment
   Trowels (13)
   Brickhammer (1)
   Levels (3)
   Jointers (3)
   Line blocks (13 pairs)
   Mason line, ball (1)
   Mortarboards (13)
   Measuring pails (6)
   Brick grab (1)
   Brick set (1)
   Spacing rule (1)
   Set of occupational comics (1)

3. Expendable materials
   Brick (1500)
   Sand (2 tons, 1814.4 kg)
   Hydrated Lime (5 bags)

D. Preparation Prior to Class

Duplicate student work sheets.
Check expendable materials listed.
Set out tools for observation.

E. During Class Sessions

Divide your class in half, Groups A and B. Allow Group A to choose an occupational comic book of their choice. Require these students to complete the check sheets at the end of these books on a separate sheet of paper. Group B will be involved with the activity described below. When Group B has completed the activity, reverse group positions so students will have gone through both aspects of the activity.

A suggested schedule is:

1st period: Give out student answer sheet for students' use in doing Objectives I–IV. Tools should be laid out for students to handle and become familiar with.

2nd period: The student will use the trowel to mix the mortar. This experience will allow the student to use the trowel more easily when he/she begins to lay brick. Have student mix mortar on the mortarboard. Mortarboards should be arranged in straight lines for better observation. The student should practice spreading mortar on the side of his/her mortarboard before trying to spread on the work stand. At the end of the class period, store the mortar in the mortarbox. Practice mortar may be used again by adding more water and mixing thoroughly with the trowel. Have students clean tools and put them in their proper place at the end of the class period.

3rd period: Students should be allowed to practice attaching line blocks to a mason line. Have students remix their mortar by adding water. Have students practice buttering a head joint on the end of a brick and the side edge of a half-brick. Students should store practice mortar and clean and store tools at the end of each class period.

4th period – 7th periods: Have students remix their mortar and practice spreading mortar before starting to lay brick to the line. The mortarboard should be placed about 2 feet from the workstand, and the brick should be stacked in a neat pile on each side of the mortarboard. Have students attach line block to the line and to the workstand before starting to lay brick. Have students take down their brick wall and store all materials in their proper place at the end of the class periods.

The programmed text should be followed very closely for each activity.

F. Follow-up Activities

Have students complete a VIEW Fact Sheet on mason or bricklayer.

Write a list of buildings in your community constructed with bricks.

ANSWER KEY

OBJECTIVE I

A. Brick grabs
B. Mortarboard
C. Gallon pail
D. Workstand

OBJECTIVE II

1. Brickhammer
2. Spacing rule
3. Line blocks
4. Mason's line
5. Brick set
6. Trowel
7. Level
8. Jointer

OBJECTIVE III

1. Shank
2. Point
3. Handle
4. Blade
5. Ferrule

OBJECTIVE IV

1. H
2. J
3. F
4. K
5. C
6. I
7. D
8. E
9. A
10. G
11. B

MASTERS FOR DUPLICATION

VIEW Fact Sheet
Student Answer Sheet

VIEW FACT SHEET

NAME _____ CLASS _____ OCCUPATION _____

A. List the advantages (good points) of this occupation (job).

B. List the disadvantages (bad points) of this occupation (job).

C. List three things you should know to do this occupation (job).
1.
2.
3.

D. What type of education should you get to be prepared (do) for this occupation (job)?

E. What courses must you take to go into this occupation (job)?

F. What do you think your future in this occupation (job) will be?

G. What wage can you expect in this occupation (job)?

H. What are the working hours of this occupation (job)?

I. To learn more about this occupation (job), write to:

J. Using a scale of 1 to 5, circle the number that measures your interest in this occupation (job) as a possible career.

I don't like it. 1 2 3 4 5 I like it.

MASONRY

STUDENT ANSWER SHEET

INSTRUCTIONAL OBJECTIVE I

A _____

B _____

C _____

D _____

INSTRUCTIONAL OBJECTIVE III

1 _____

2 _____

3 _____

4 _____

5 _____

INSTRUCTIONAL OBJECTIVE II

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

8 _____

INSTRUCTIONAL OBJECTIVE IV

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

8 _____

9 _____

10 _____

11 _____

T&I – BRICK MASONRY II

Kit No. 80

STUDENT
LEARNING ACTIVITY GUIDE

Prepared by

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BRICK MASONRY II

INTRODUCTION

Masonry covers a broad spectrum of building materials, such as brick, block, stone, mortar and cement, and the ability to use them. In most areas a person will work as an apprentice for a period of three to four years before acquiring the necessary skills to become a skilled mason. This activity will cover the basic tools, terminology and skills for mixing mortar and laying brick.

History: Stone was probably used many years before brick, but brick is probably the oldest manufactured building material. Excavations made in recent years have uncovered cities estimated to be over 5,000 years old that were built with brick. Some of the early bricks were molded into shape and dried in the sun. Sun-dried brick is known as "adobe" brick. Other brick was molded, dried and then subjected to fire.

The first brickmaking machine in the United States was patented in 1800. Brick was made in the North Americas as early as 1612. Brick is used in industrial and residential buildings. Today on your way home from school notice how many buildings are made from brick.

The first activity will be to learn the basic tools and materials used in masonry. Each student should be able to name the individual tools and also learn the purpose of each tool.

Before beginning the actual uses of the tools, each student should know certain terms (the language of the trade) pertaining to brick laying.

GOALS

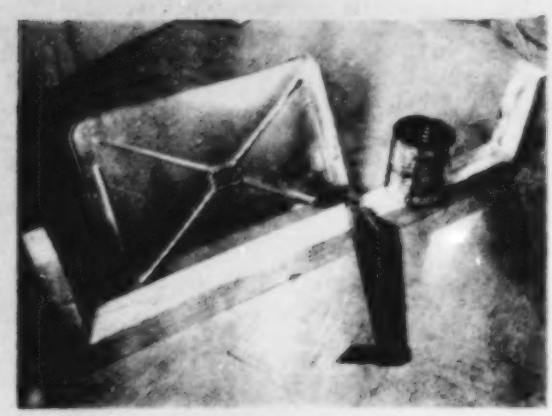
The purpose of this text is to introduce the students to the skills of the masonry trade. To become familiar with the trade the student must learn the tools and their uses, and be familiar with certain terms related to the trade, known as "the language of the trade."

DIRECTIONS

The programmed text is laid out in a sequential order. Each objective should be completed before the next one is started. The student will learn the tools and terms of the trade before beginning the shop practices. Study the directions for each objective before the actual steps are begun. Follow each step exactly as stated. If help is needed, call the instructor. Make sure each checkpoint is correct before going to the next objective.

Instructional Objective 1

Given a list of general tools the student will identify the purpose of these tools.



STEP 1 – Masonry tools are divided into 2 groups:

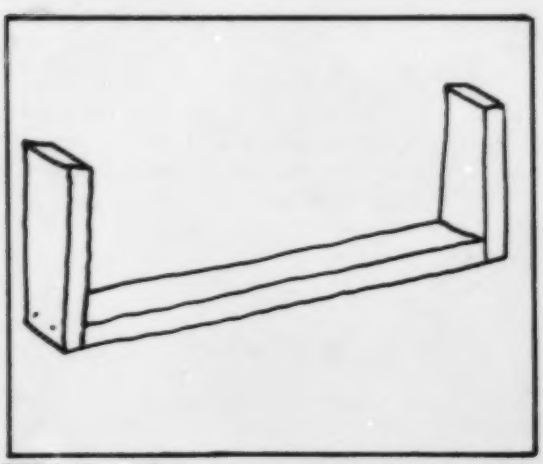
General tools
Handtools

This objective will offer only the general tools.

STEP 2 – This is a mortarboard. It is a square board used to hold mortar when laying brick.

STEP 3 – This is a gallon pail. It is used to measure exact amounts of sand, lime and water.

STEP 4 – These are brick grabs. They are used as tongs to clamp and transport 6 bricks at one time.

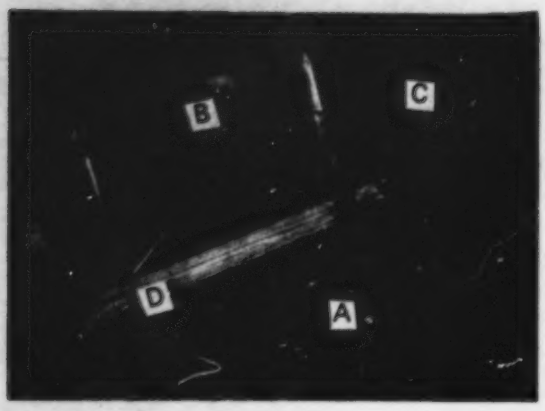


STEP 5 – This is a workstand. You will practice laying brick on this stand.

11

Check Point

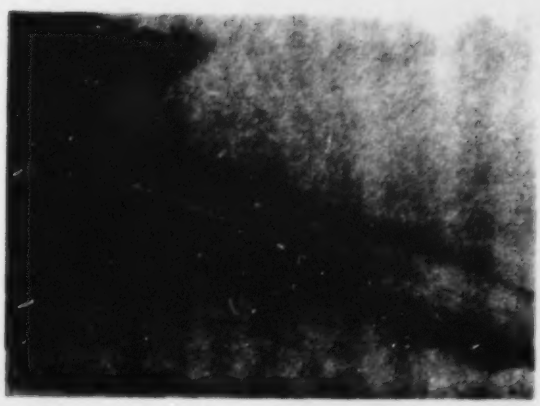
On a check sheet provided by your instructor, identify these 4 general tools used in masonry.



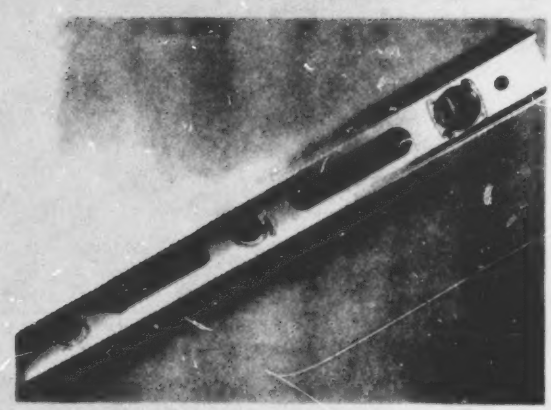
Instructional Objective 11

Given a list of handtools, the student will identify tools by name.

STEP 1 – This is a trowel. A trowel is used for handling and spreading mortar.



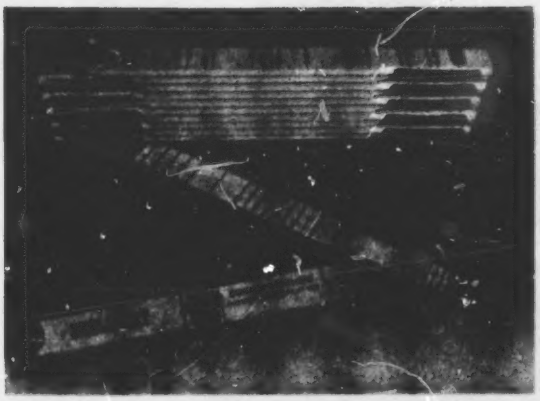
STEP 2 – This is a brickhammer. A brickhammer is a hammer with a special chisel built on the back side of the hammer for cutting bricks.



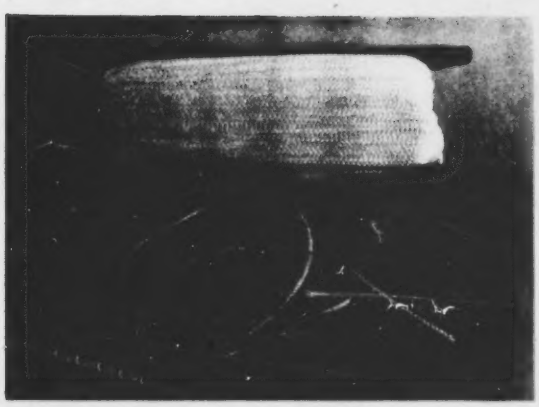
STEP 3 – This is a level. A level is a device used for leveling and plumbing brickwork.

STEP 4 – This is a jointer. A jointer is a tool used to dress up and make the mortar joints between the bricks waterproof. There are several different types of brick jointers.

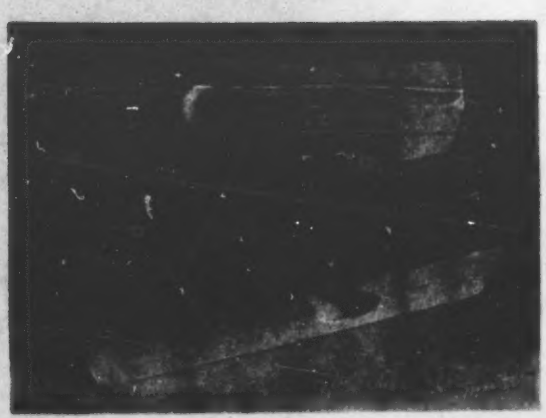
STEP 5 – This is a brick set. The brick set is a wide-faced chisel used for cutting brick. The blade of the chisel should be placed on the brick at the place of the desired cut with the level turned toward the student. Give the chisel a hard stroke with the brickhammer to make the cut.



STEP 6 – This is a spacing rule. A spacing rule is a six-foot (1.83 m) zig-zag ruler with special numbers on the back side used to gauge out uniform courses of brick. Each number represents the thickness of a brick plus the mortar joint under it. Example: The number 6 gauges the height of a brick plus the mortar joint to be 2–3/4 in. (6.985 cm) high. By following the number 6, four courses would be layed to the height of 11 inches (27.94 cm).



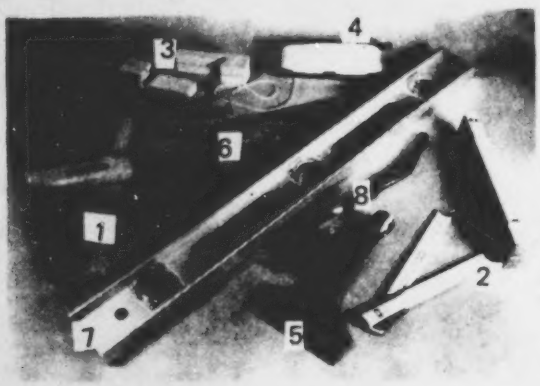
STEP 7 – This is a mason's line. The mason line is a nylon line used as a guide to keep the bricks level and straight when laying brick on a straight wall.



STEP 8 – This is a set of line blocks. Line blocks are used to hold the mason line in place when laying brick on a straight wall.

Check Point

On the Student Answer Sheet identify the following 8 tools:



Instructional Objective III

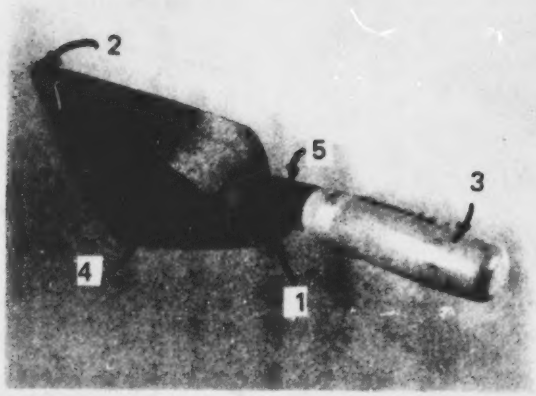
The student will identify the 5 parts of a trowel.

STEP 1 – The trowel has 5 parts which will be referred to in this activity. The first part (A) is the handle.

STEP 2 – The small metal part connected to the handle is called the (B) ferrule.

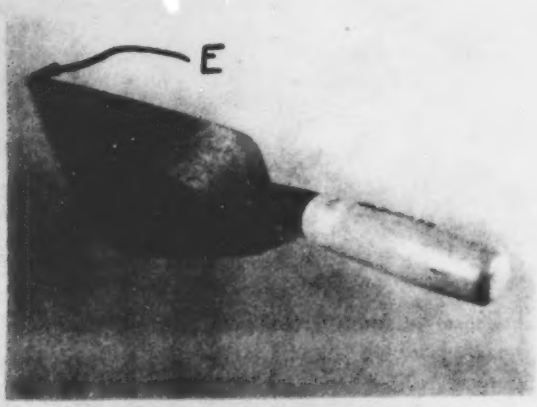
Check Point

On your Student Answer Sheet identify the 5 parts of the trowel.



STEP 3 – The metal shaft from the ferrule to the trowel is the (C) shank.

STEP 4 – The flat metal part of the trowel that the shank connects to is the (D) blade.

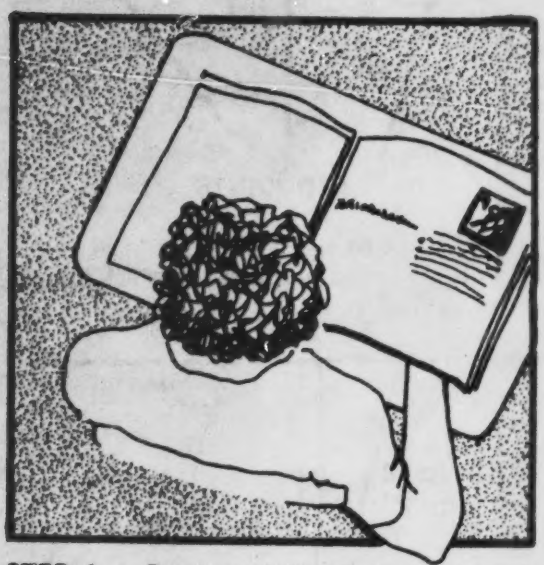


STEP 5 – The end of the blade of the trowel is the (E) point.

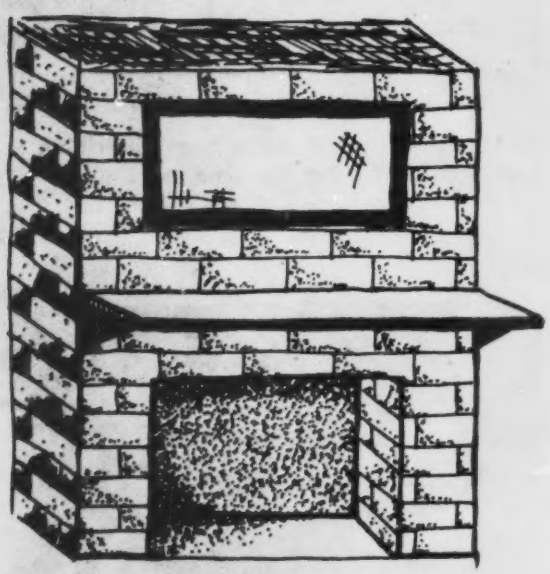
15

Instructional Objective IV

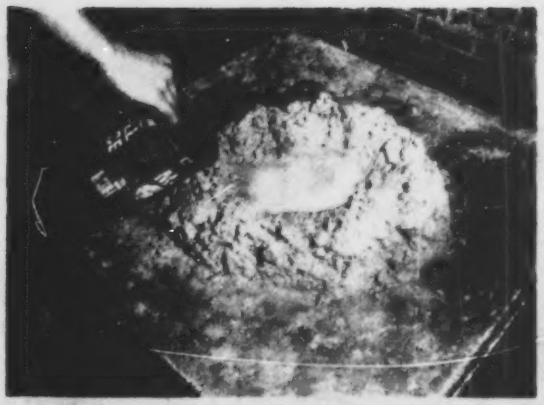
The student will define the terms used in masonry.



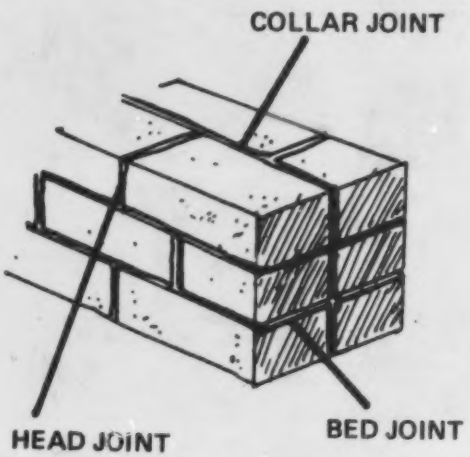
STEP 1 – Read carefully all the terms and definitions. Also, study the pictures which aid in the description of these terms.



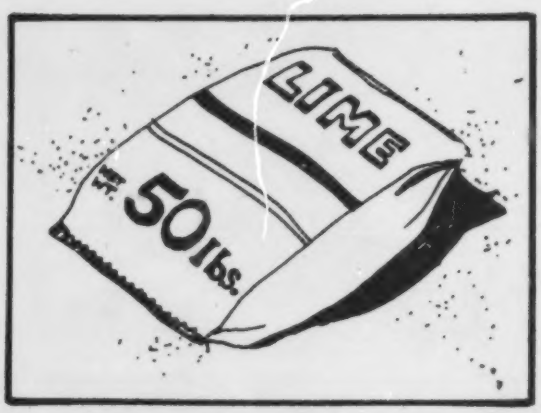
STEP 2 – Masonry is the term used to describe anything built from brick, block, stone, or tile that is bonded together with mortar.



STEP 3 – Practice mortar is the mortar used in this activity. It is made up of sand, lime and water. This mortar can be remixed after it has dried by adding water.



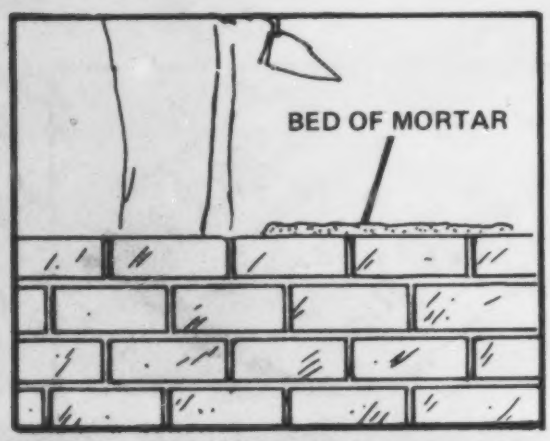
STEP 4 – Joint is the mortar between bricks that bonds them together.



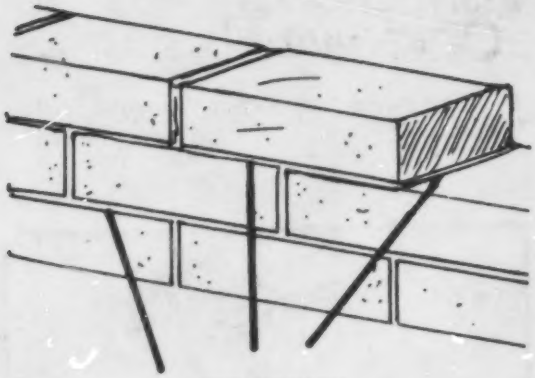
STEP 5 – Lime is a white powder used in making practice mortar.

STEP 6 — Spreading mortar is the procedure used to spread enough mortar for several bricks.

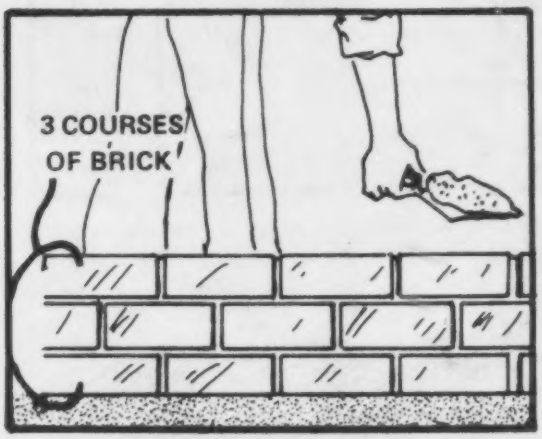
STEP 7 — Tempering mortar is the term applied to adding water to mortar and mixing to the proper consistency.



STEP 8 — Bed of mortar is the term used to describe the horizontal (↔) layer of mortar on which brick will be laid.

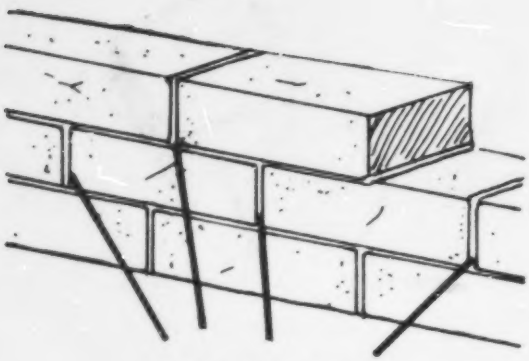


STEP 9 — Bed joint refers to all the horizontal (↔) rows of mortar in which brick has been laid.



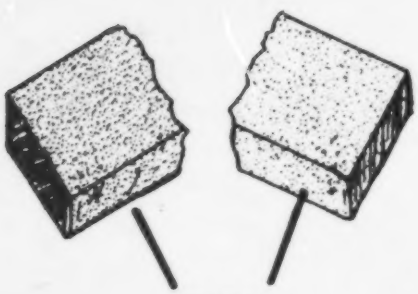
STEP 10 — Course is the term describing a row of brick that has been laid in a wall.

STEP 11 — Buttering is the practice of placing mortar on a brick with a trowel.



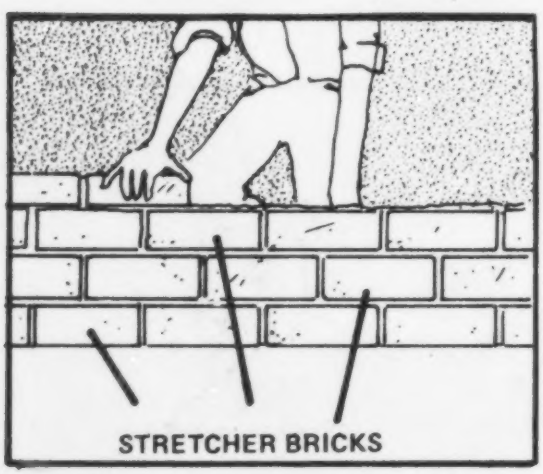
HEAD JOINTS

STEP 12 – A head joint is the vertical (↕) joint between the ends of a brick.



BATS

STEP 13 – A bat is a piece of, or half a brick.



STRETCHER BRICKS

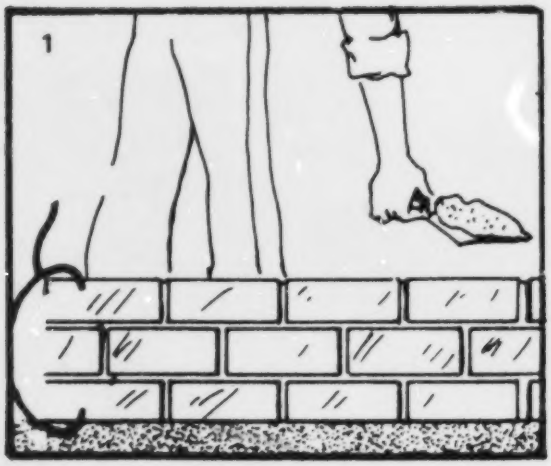
STEP 14 – A stretcher is a brick layed with its greatest dimension horizontal (↔), and its face parallel to the wall.

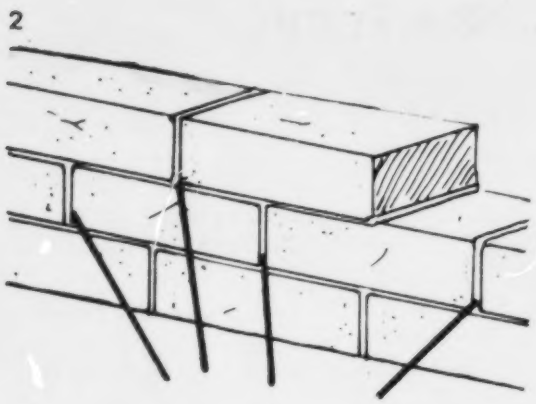
Check Point

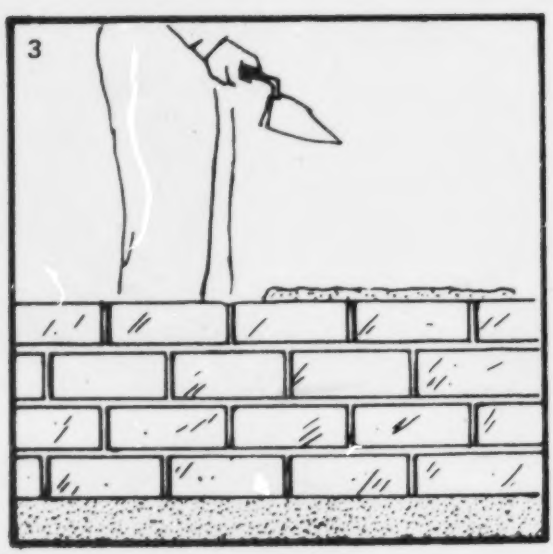
On your Student Answer Sheet place the proper definition with the correct picture.

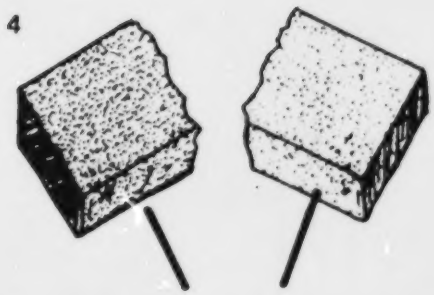
(A) The mortar between bricks that bonds them together.
(B) A white powder used in making practice mortar.
(C) The procedure used to spread enough mortar for several brick.
(D) The term applied to adding water to mortar and mixing to the proper consistency.
(E) A brick laid with its greatest dimension horizontal (↔) and its face parallel to the wall.
(F) The term used to describe the horizontal (↔) layer of mortar on which brick will be laid.
(G) Refers to all the horizontal (↔) layers of mortar in which brick has been laid.
(H) The term describing a row of brick that has been laid in a wall.
(I) The practice of placing mortar on a brick with a trowel.
(J) The vertical (↕) joint between the ends of brick.
(K) A piece of, or half a brick.

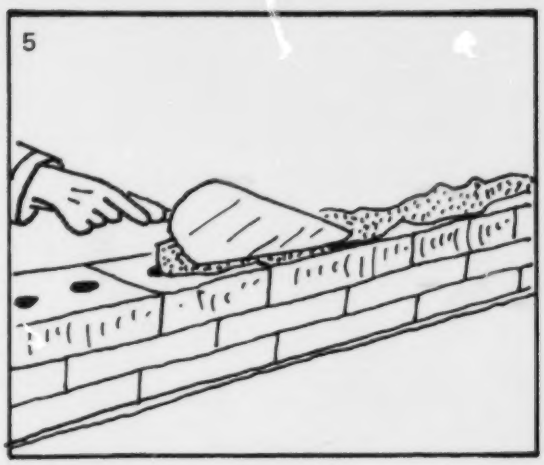
13

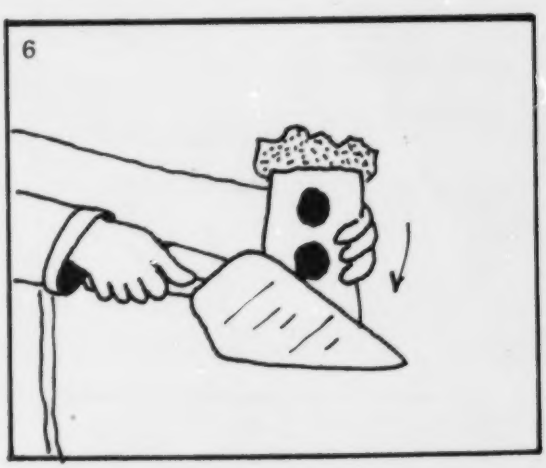












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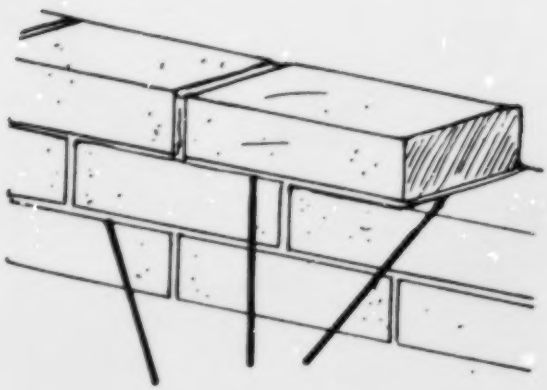

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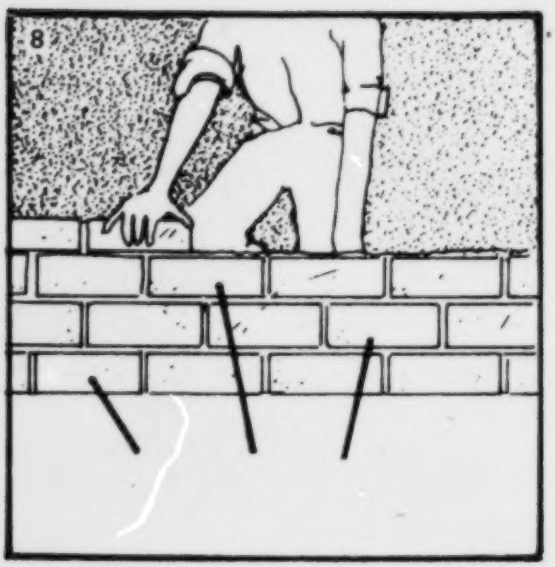

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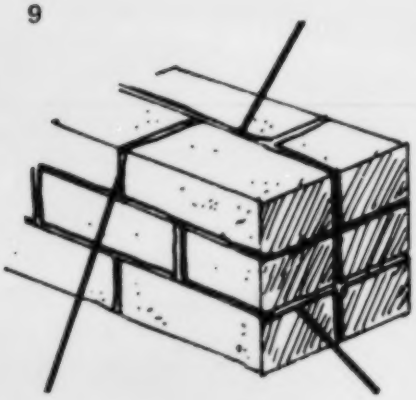
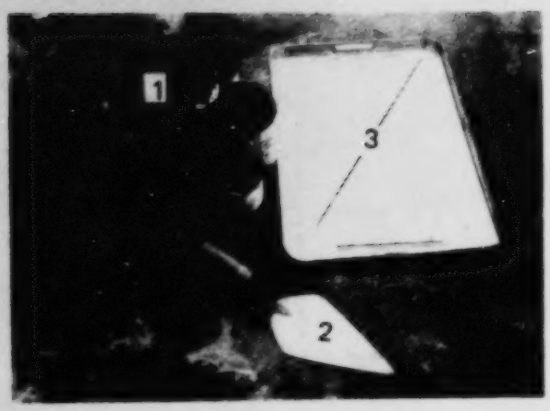


Instructional Objective V



The student will prepare area for work.

STEP 1 – Obtain 5 one-gallon pails.

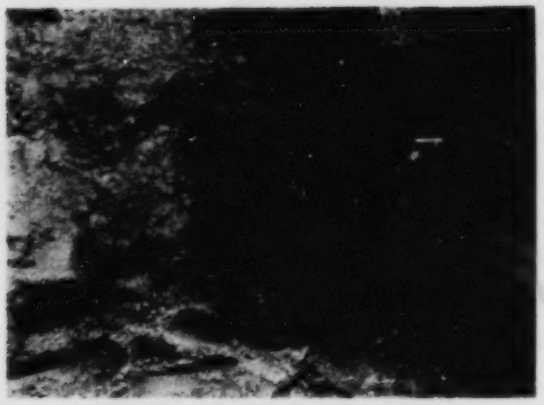
STEP 2 – Obtain 1 trowel.

STEP 3 – Obtain 1 mortarboard.

Check Point

Check with your instructor before proceeding to mix your practice mortar.

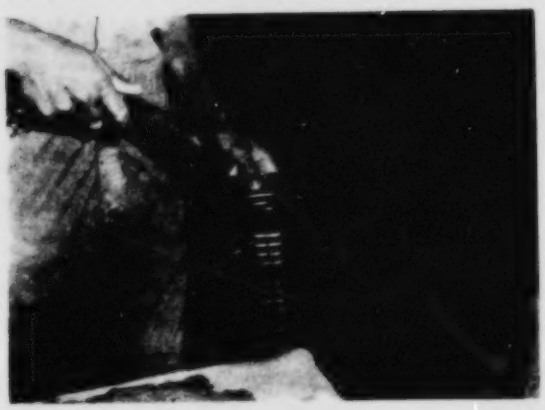
Instructional Objective VI



The student will mix practice mortar.

STEP 1 – Fill 3 pails with sand.

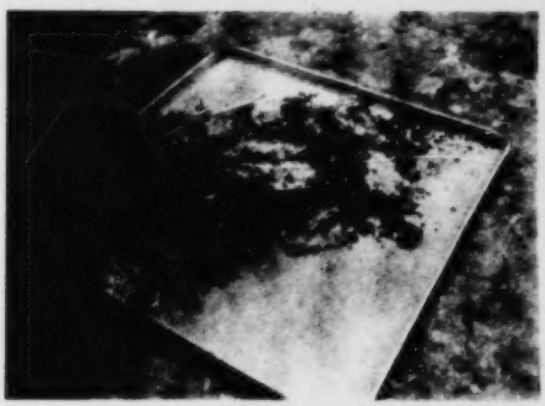
STEP 2 – Fill 1 pail with lime.



STEP 3 – Fill 1 pail with water.

STEP 4 – Empty 3 one-gallon cans of sand on the mortarboard.

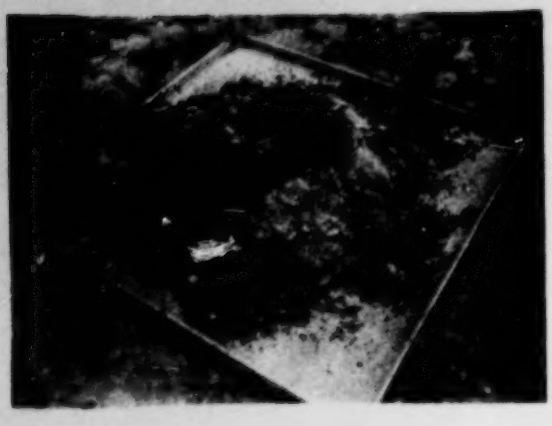
STEP 5 – Pour one can of lime on top of the sand on the mortarboard. Pour the lime onto the sand very carefully. Lime is very dusty and not very pleasant to breathe.



STEP 6 – Mix the sand and the lime together thoroughly by troweling up the material from the side and the bottom of the pile and placing it on the top of the pile.

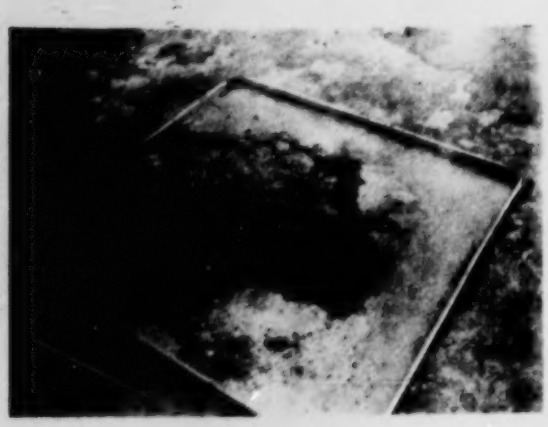
Check Point

Does your workstand look like this picture?



STEP 7 – With the point of your trowel, open up a large opening in the top of the sand and lime mixture.

STEP 8—Pour 1/2 gallon (1.89 l) can of water into the opening of the mixture.



STEP 9 – Trowel the mixture from the side of the pile into the center. Work carefully so the water will not splash on your clothing.

Check Point

Are your sand and lime mixed thoroughly? If not continue to mix until no spots of lime or sand are seen.

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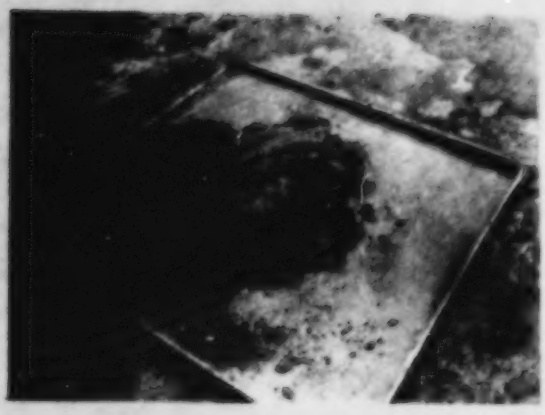
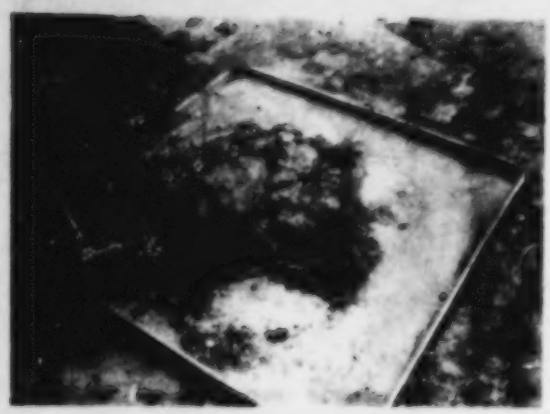


STEP 10 – Continue troweling mixture into center of pile until all the water is absorbed.



STEP 11 – Add more water as needed. Continue troweling mixture until enough water is mixed in to make the mixture soft and spongy.

Check Point

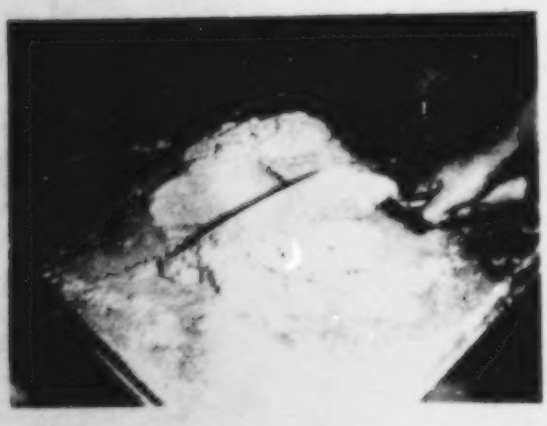
Mortar should be soft enough to slide off the trowel easily, but stiff enough to stand in a neat pile on your board. If mortar is too soupy, add more sand and lime. If mortar is too stiff, add more water.

24

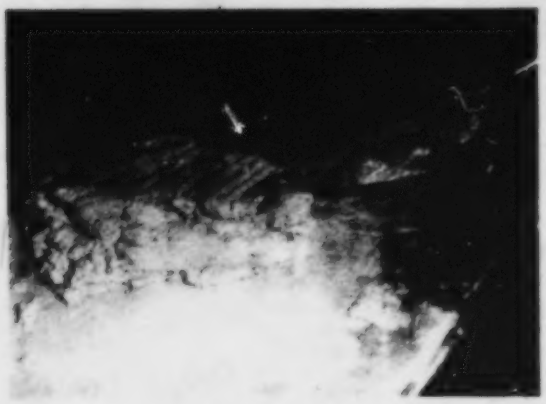
Instructional Objective VII

The student will spread a trowel full of mortar. The trowel must be held properly before gathering mortar onto it. A full trowel of mortar should be picked up to spread properly.

STEP 1 – Grasp the trowel in your right hand firmly (left hand if student is left-handed), make sure the thumb is on top of the handle near the ferrule, and the index finger is on the bottom of the handle near the ferrule.



STEP 2 – Cut a small amount of mortar from the pile on the trowel. Cut the mortar in such a manner that the mortar is torpedo-like and about the length of the trowel.



STEP 3 – Aim the point of the trowel at the end of the torpedo-like mound of mortar.

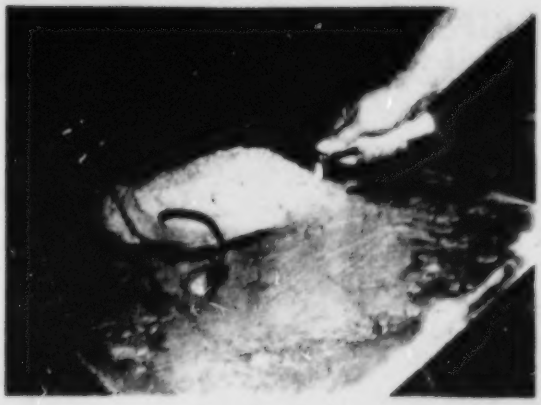
STEP 4 – Slip the trowel under the small pile without disturbing the mortar.

STEP 5 – When spreading mortar the trowel should not be held too rigidly. The arm holding the trowel should be extended from the body, and the trowel should be held over and just above the wall or workstand on which the mortar is to be spread.

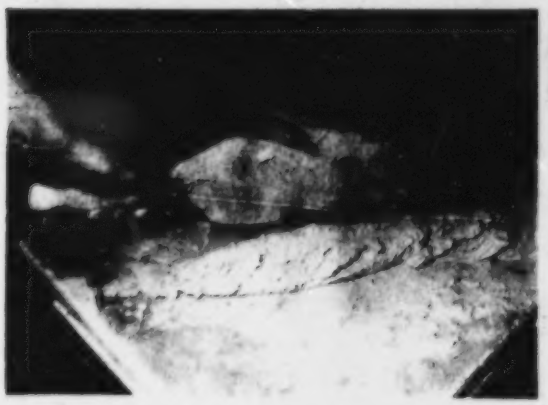
STEP 6 – You must set the mortar on your trowel. This is done by first raising the point of the trowel up.

STEP 7 – Then snap your wrist and the point of your trowel down toward the workstand. Be careful not to splatter mortar on your classmates.

STEP 8 – Start the spread by tilting the trowel to the left slightly and giving the wrist a slight snap. This allows a small amount of the mortar to slide off the trowel onto the mortarboard.



STEP 9 – At the same time that the mortar is sliding off the trowel, give the trowel a quick but smooth pull toward your body. When the spread is started, the trowel should be tilted as it is pulled toward the body.



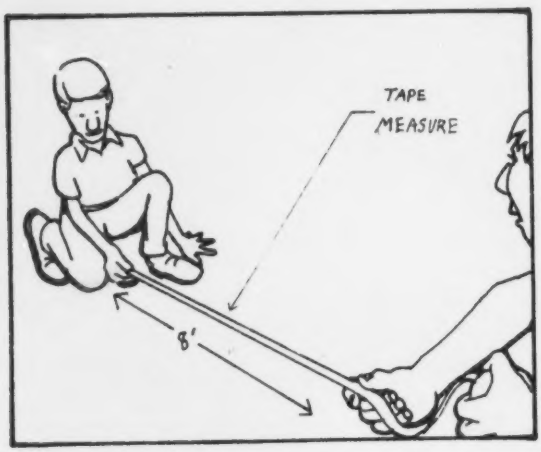
STEP 10 – The trowel should be tilted completely on its edge by the time the spread is finished.

Check Point

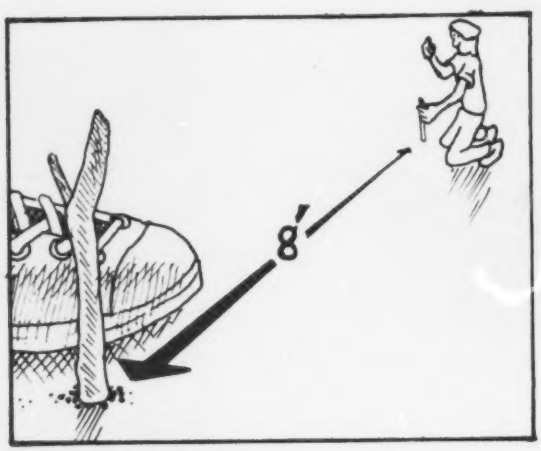
Try spreading mortar for two or three bricks within one spread without dropping the mortar on the floor. This should be practiced for several times to acquire the proper skill on your mortarboard.

Instructional Objective VIII

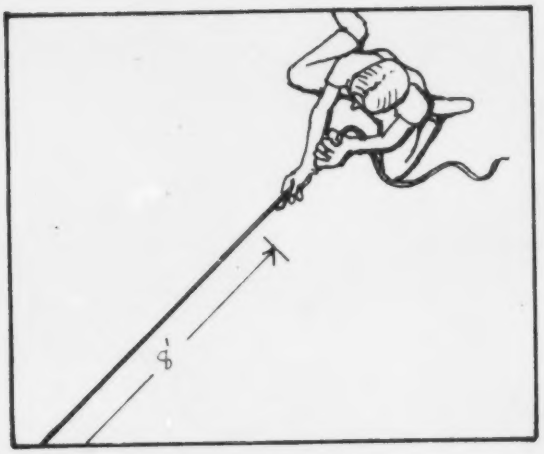
Each pair of students will locate 2 corners for a brick wall.



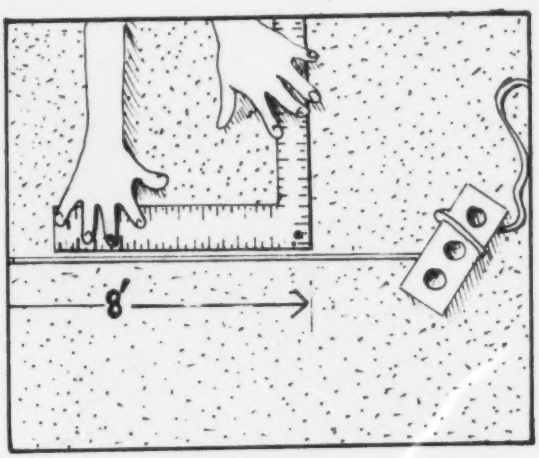
STEP 1 – Locate two points about 8 feet (2.44 m) apart.



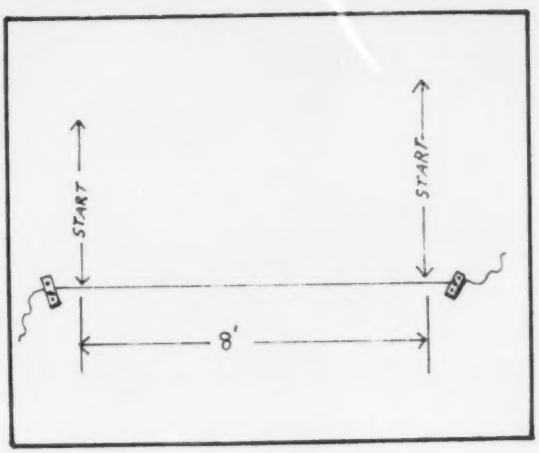
STEP 2 – Mark the location of the two points with something stationary. If you are working outside, tap sticks in the ground to mark the points. If you are working inside, points can be marked with chalk on a concrete floor.



STEP 3 – Using a string, connect the two points.



STEP 4 – Using a carpenter's square against the line, locate a 90 degree corner on each end of the wall.



STEP 5 – The newly found 90 degree corners are the starting points for each student.

Check Point

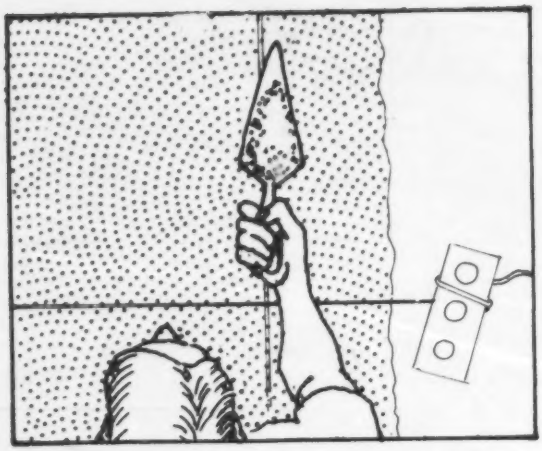
Each student should recheck each other's layout for accuracy.

Instructional Objective IX

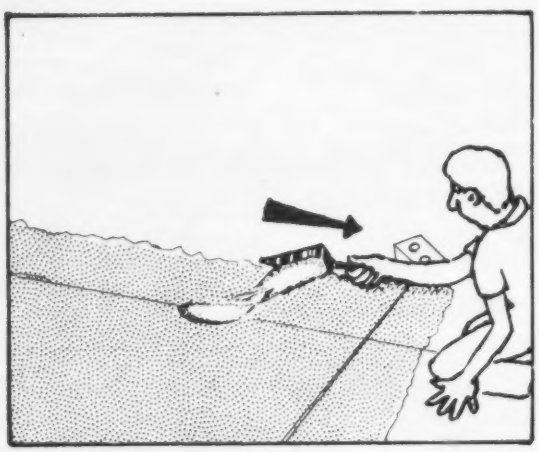
Each student will spread a bed of mortar.

STEP 1 – Spread a piece of plastic on the floor (if you are outside, this step may be omitted).

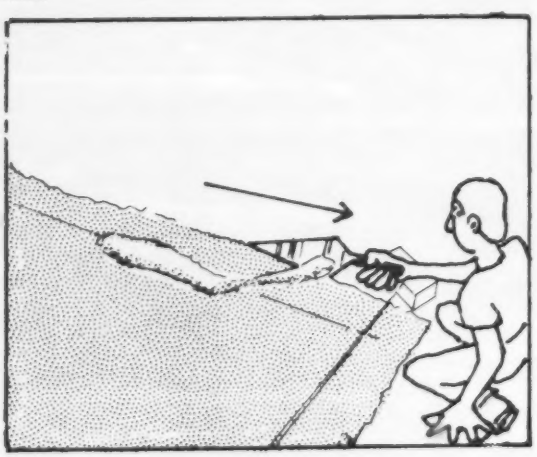
STEP 2 – Set a full trowel of mortar.



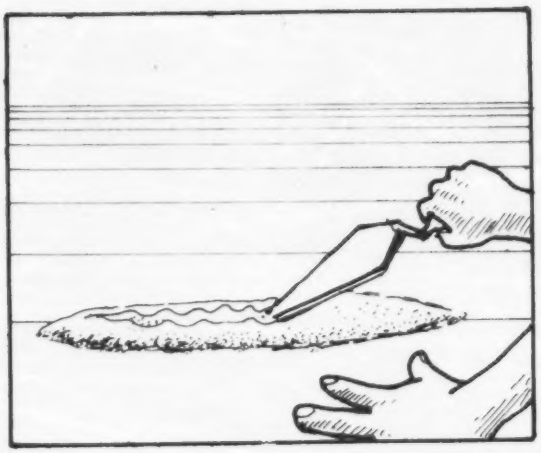
STEP 3 – Looking through the plastic, if inside, hold the set mortar over the corner so the blade of your trowel is parallel with the line.



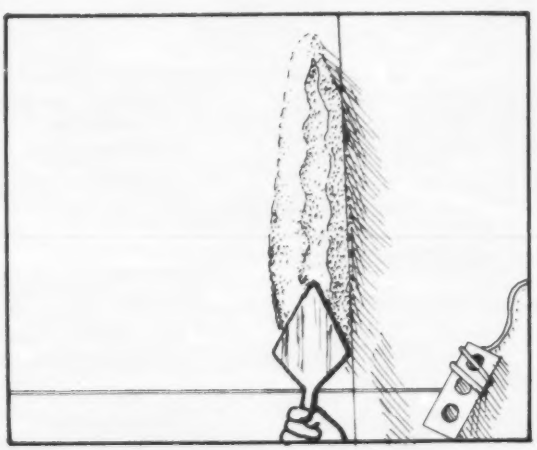
STEP 4 – Tilt some mortar onto the work line.



STEP 5 – Pull trowel toward you, and you have set a mortar bed.



STEP 6 – Riffling is done by running the point of the trowel down the center of the spread mortar. The bottom of the blade of the trowel should be turned upward.



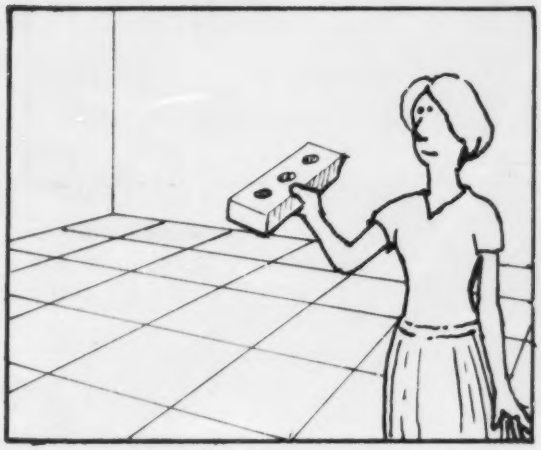
STEP 7 – Move your hand from left to right slightly while pulling the trowel down the center of the mortar.

Check Point

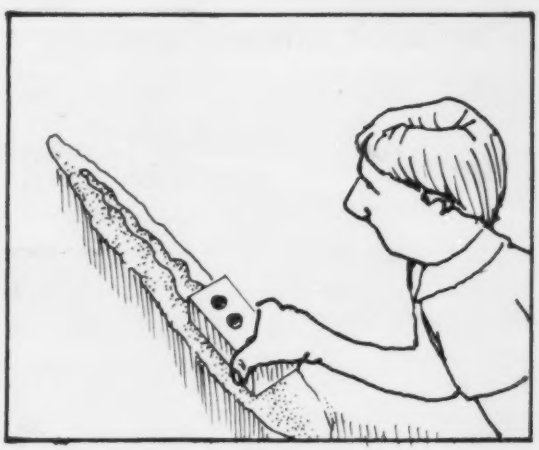
Do you have about a 3 inch (.91 m) length of mortar? If so, proceed to objective X. If you do not, retrace steps 1 – 7.

Instructional Objective X

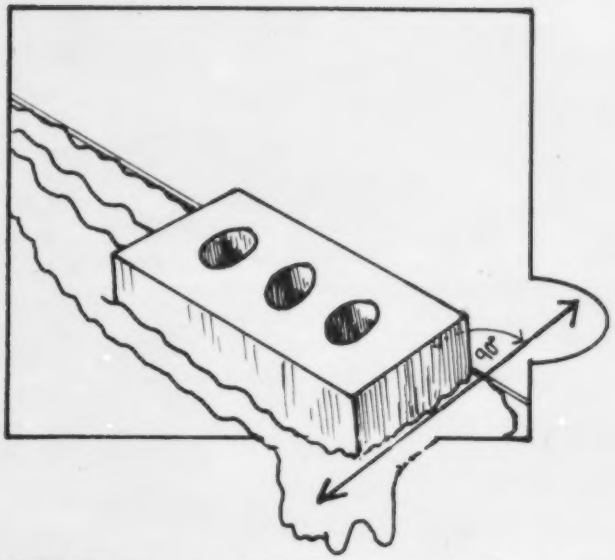
Each student will set a brick in the corner of the wall.



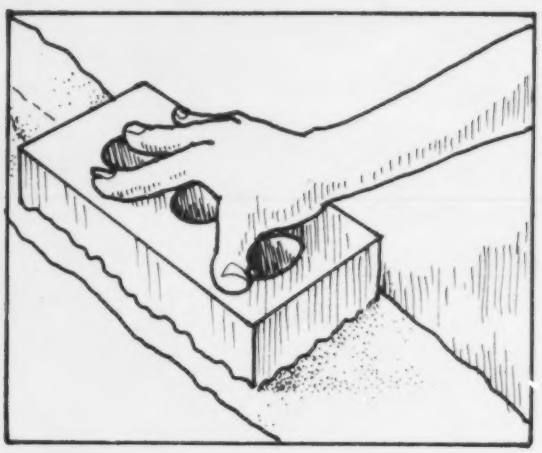
STEP 1 – Pick up a brick.



STEP 2 – Line the length of the brick along the long string line.



STEP 3 – The end should align with the short 90 degree corner side of the wall.



STEP 4 – Gently press the brick into the bed of mortar.

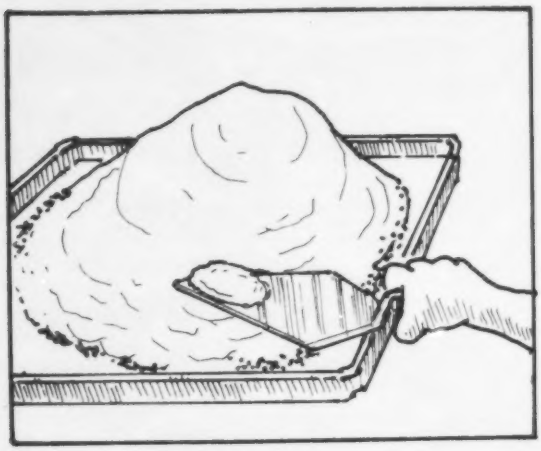
Check Point

Each student should check the work of other students for accuracy.

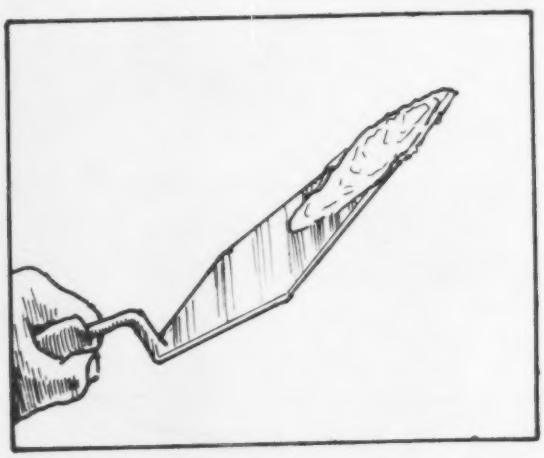
Instructional Objective XI

Each student will set the mortar on the trowel for buttering a brick.

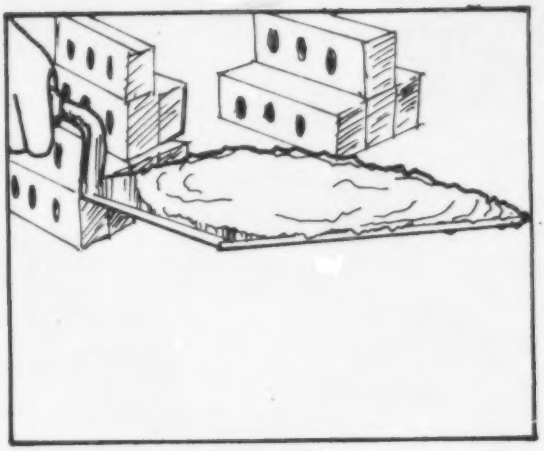
The mortar must be set on the trowel before buttering the brick. The mortar is set on the trowel to keep the mortar from falling off before reaching the brick.



STEP 1 – Pick up a small amount of mortar on the point of the trowel.



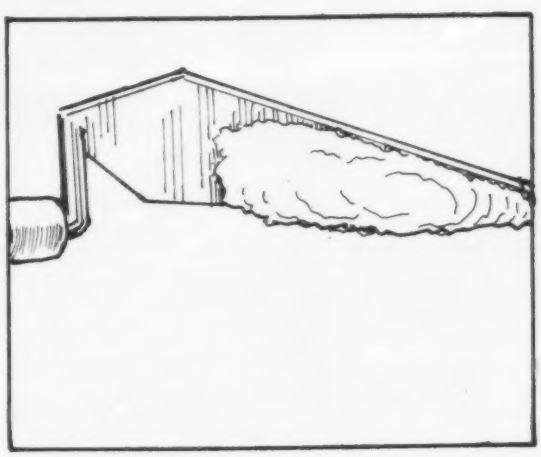
STEP 2 – Tilt the point of the trowel upward by bending the wrist.



STEP 3 – Snap the wrist downward lightly to set the mortar. Caution – do not snap the wrist too hard. The mortar should stick to the trowel.

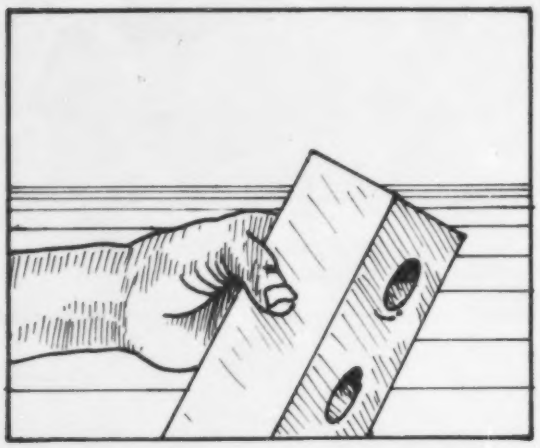
Check Point

With a quick swinging motion, turn the trowel upside down above your waist. The mortar should stick to the trowel for a few seconds before falling off. Keep setting mortar until you can do this.



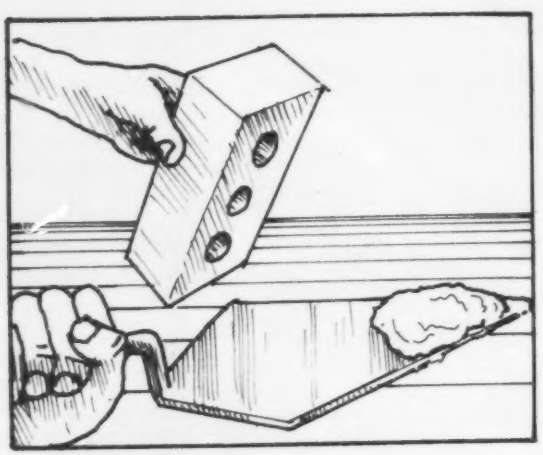
Instructional Objective XII

The student will properly butter a brick.

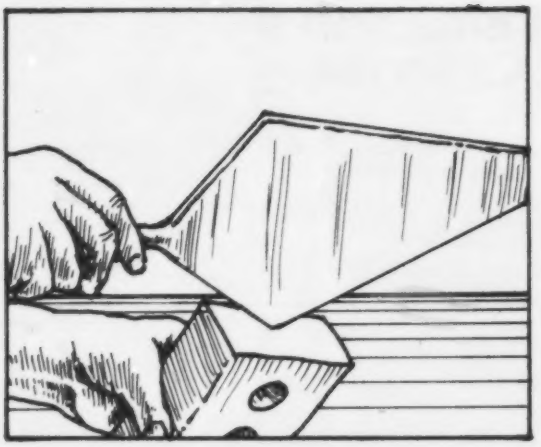


A brick must have a head joint thrown on the end of it before the brick is laid. This is called buttering a brick.

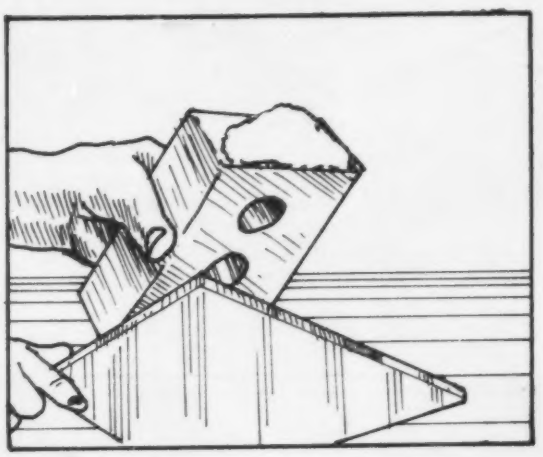
STEP 1 – Pick up a brick with your left hand and turn the forward end upward.



STEP 2 – Pick up a small amount of mortar and set it on the point of your trowel.



STEP 3 – Tilt the trowel above the brick.



STEP 4 – With one motion bring your trowel up and place the mortar on the end of your brick. Your trowel should bypass the brick as the mortar comes off the trowel and sticks to the brick.

Check Point

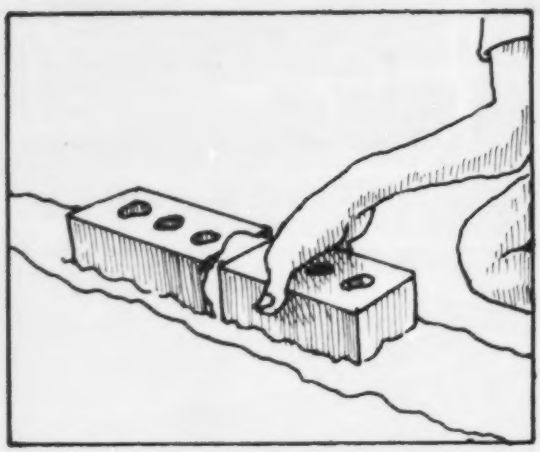
Is the end of your brick completely covered with mortar?

Did you drop part of your mortar on the floor?

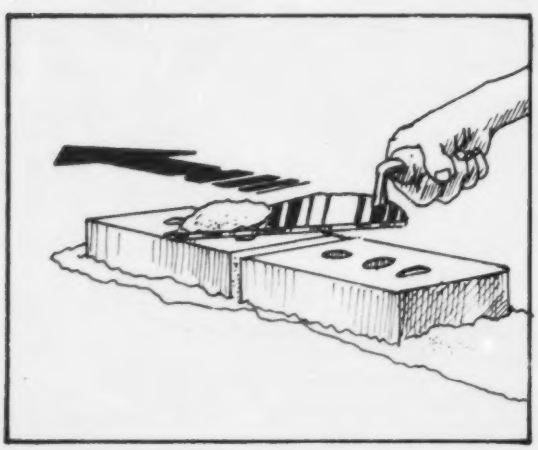
All the mortar should be placed on the end of the brick from your trowel. Keep doing this until you have it correct.

Instructional Objective XIII

Each student will build a corner 5 courses high.

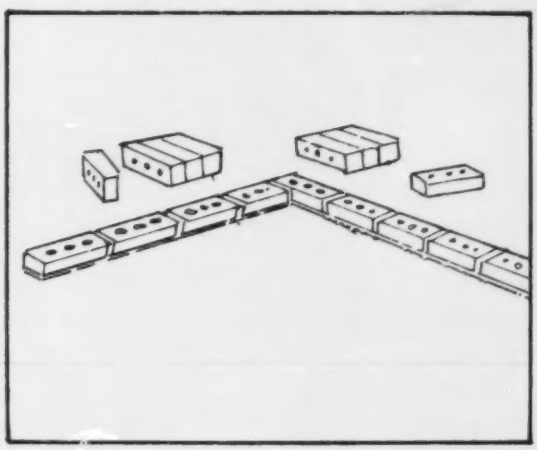


STEP 1 – Place the buttered brick from Objective XII behind the corner brick.

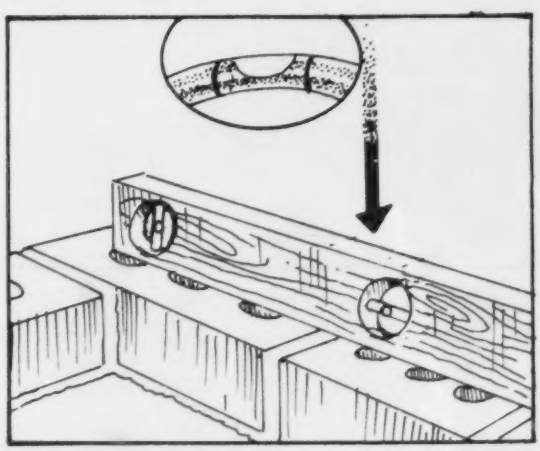


STEP 2 – Cut off the excess mortar.

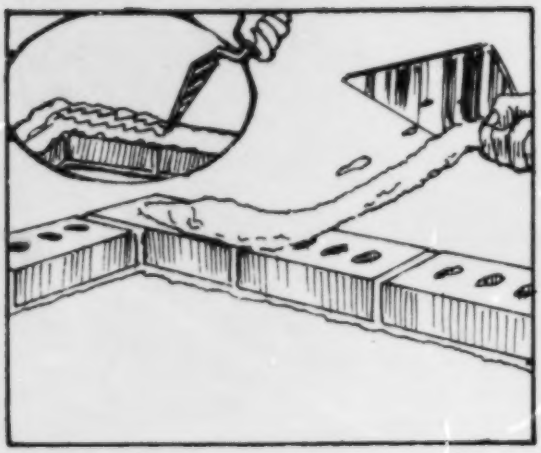
STEP 3 – Repeat steps 1 and 2 for three additional bricks along the first course.



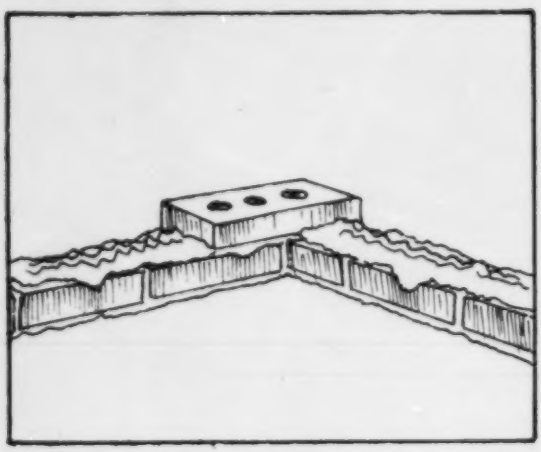
STEP 4 – Repeat steps 1–3 using four bricks along the 90 degree side of the corner.



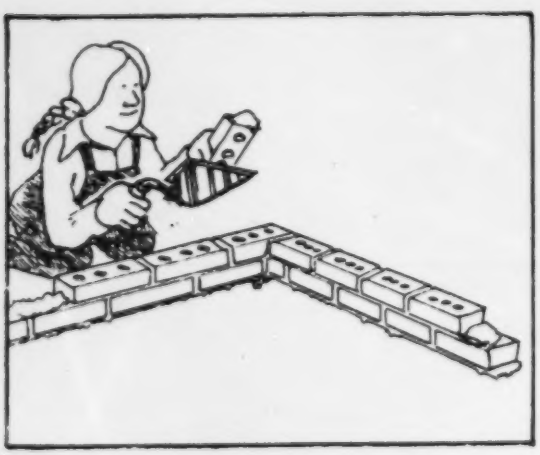
STEP 5 – Use a level to level all the brick so the bubble is even in the glass.



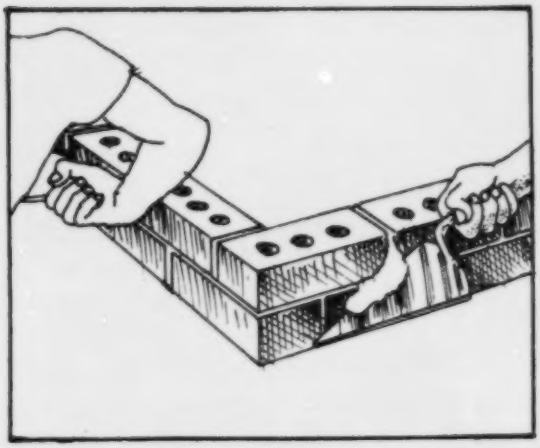
STEP 6 – Spread and riffle a second bed of mortar on top of the first course of brick.



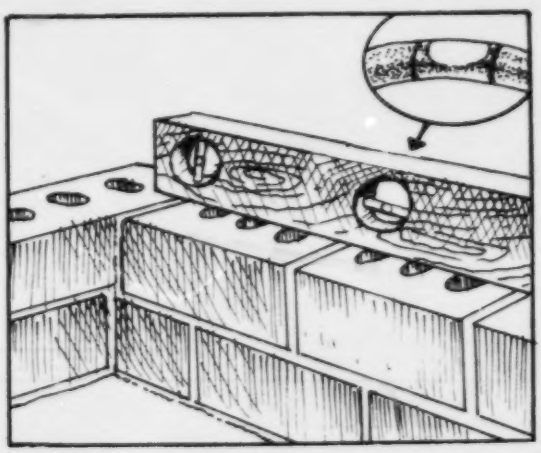
STEP 7 – Change the direction of the new corner brick.



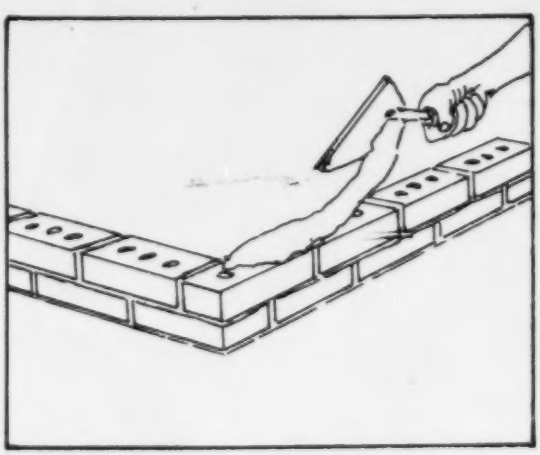
STEP 8 – Repeat steps 1–6 except lay four bricks on each side of this course.



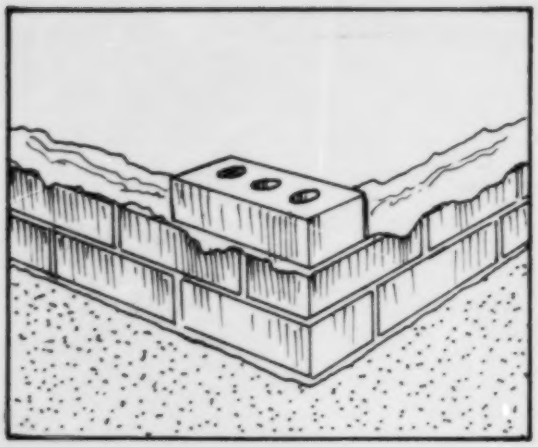
STEP 9 – Cut off any excess mortar.



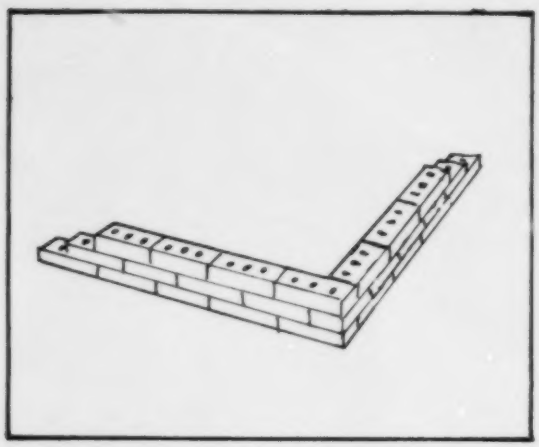
STEP 10 – Level the second course of brick.



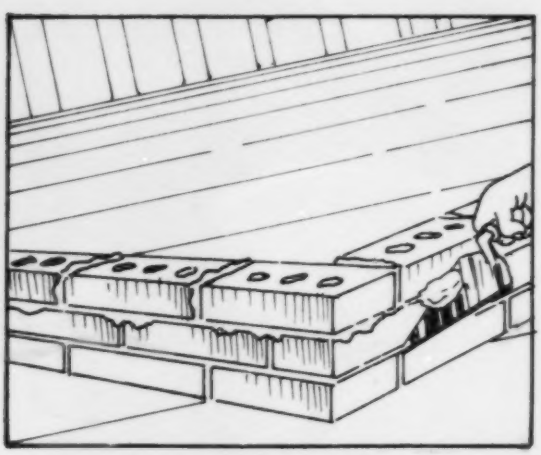
STEP 11 – Spread and riffle a third bed of mortar on top of the second course of brick.



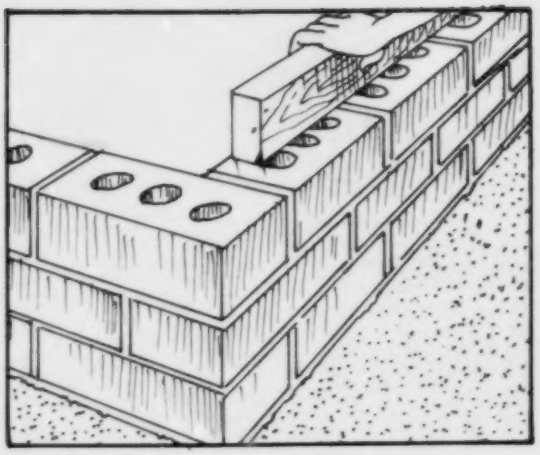
STEP 12 – Change the direction of the corner brick.



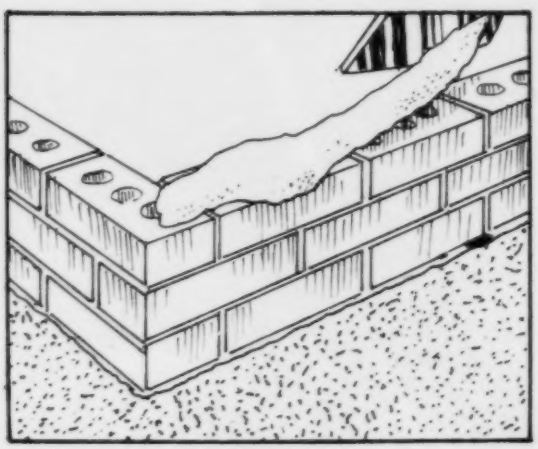
STEP 13 – Repeat steps 1–6 except lay three bricks on each side of this course.



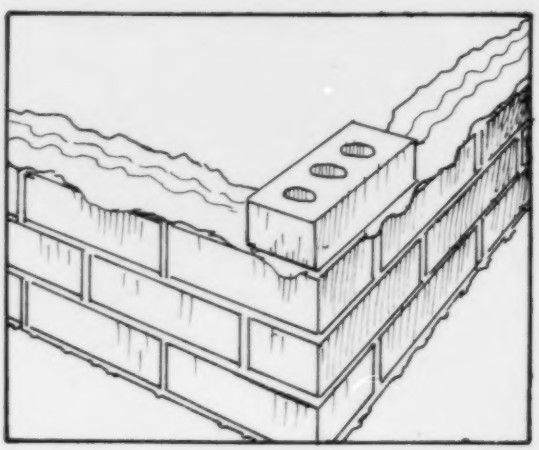
STEP 14 – Cut off any excess mortar.



STEP 15 – Level the third course of brick.

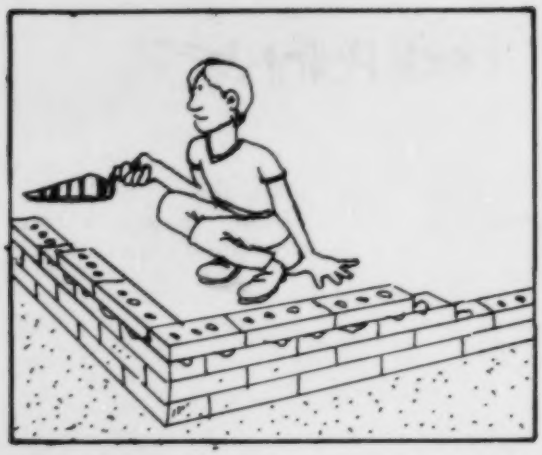


STEP 16 – Spread and riffle a fourth bed of mortar on top of the third course of brick.

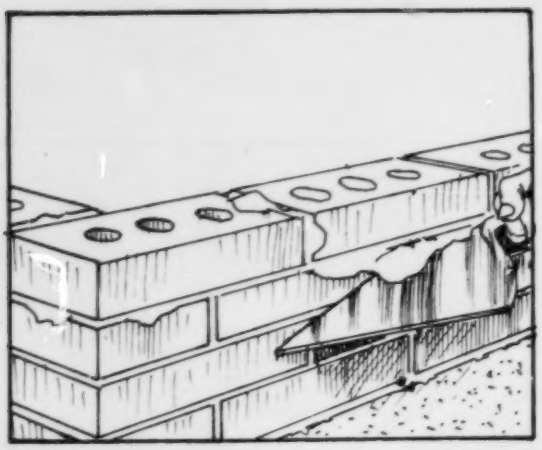


STEP 17 – Change the direction of the corner brick.

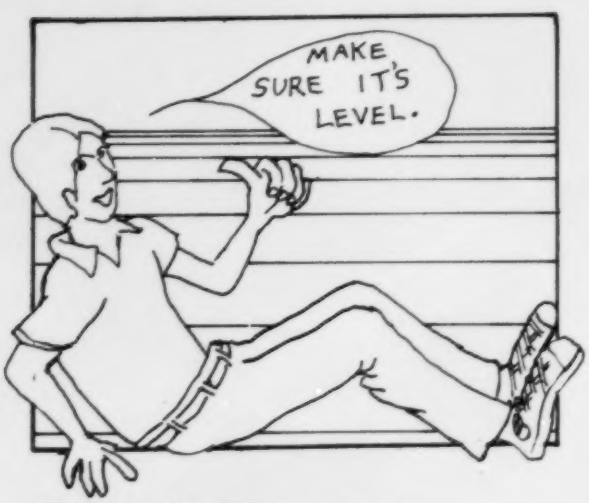
35



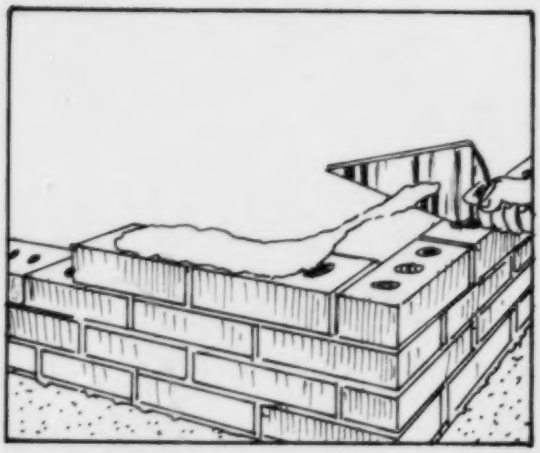
STEP 18 – Repeat steps 1–6 except lay two bricks on each side of this course.



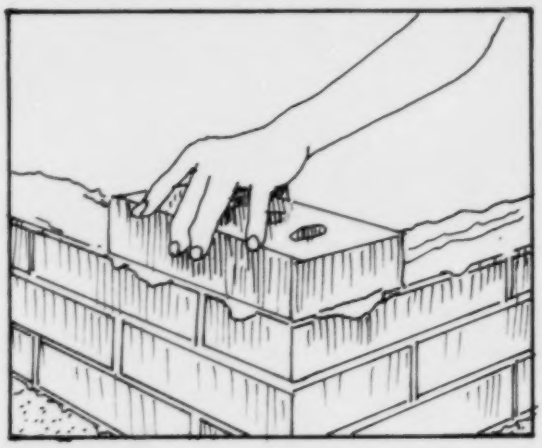
STEP 19 – Cut off any excess mortar.



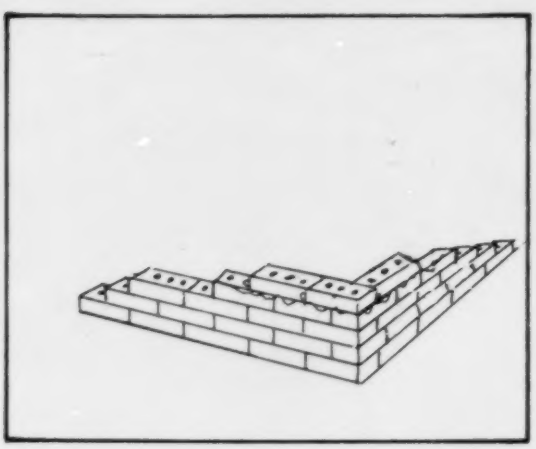
STEP 20 – Level the fourth course.



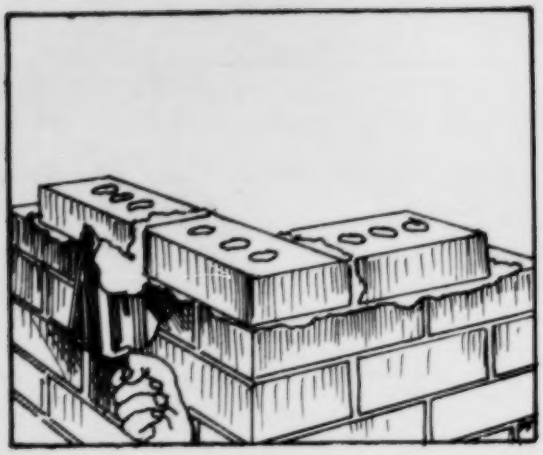
STEP 21 – Spread and riffle a fifth bed of mortar on top of the fourth course of brick.



STEP 22 – Change the direction of the corner brick.



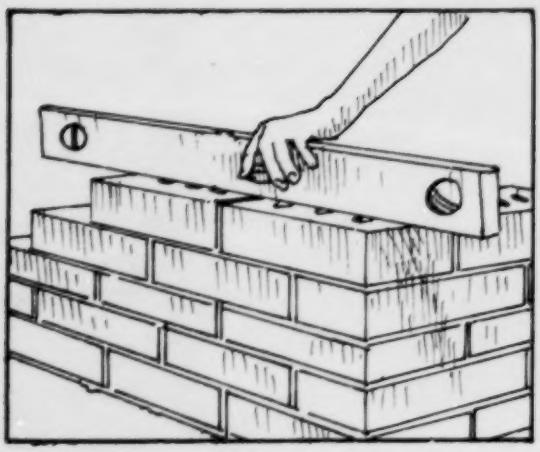
STEP 23 – Repeat steps 1–6 except lay one brick on each side of this course.



STEP 24 – Cut off any excess mortar.

Check Point

Have your instructor inspect the completed corners. Clean up any excess mortar before attempting any other objectives.

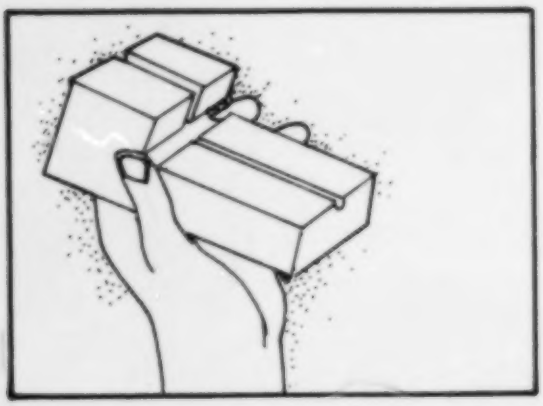


STEP 25 – Level the fifth course.

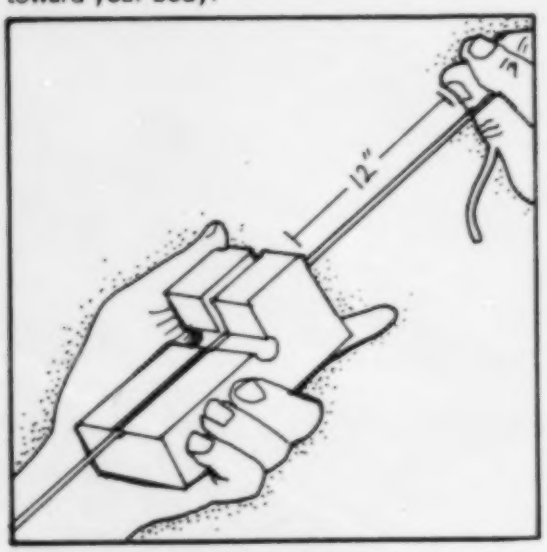
Instructional Objective XIV

The student will attach a mason line to a line block.

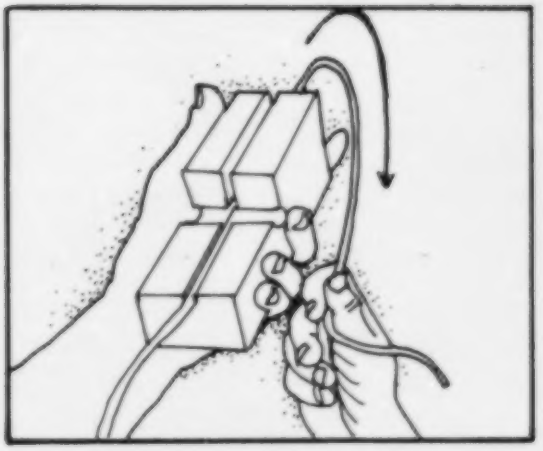
The line must be attached to the block in a special way for the line to fit the wall properly and not slip loose. Follow each step carefully.



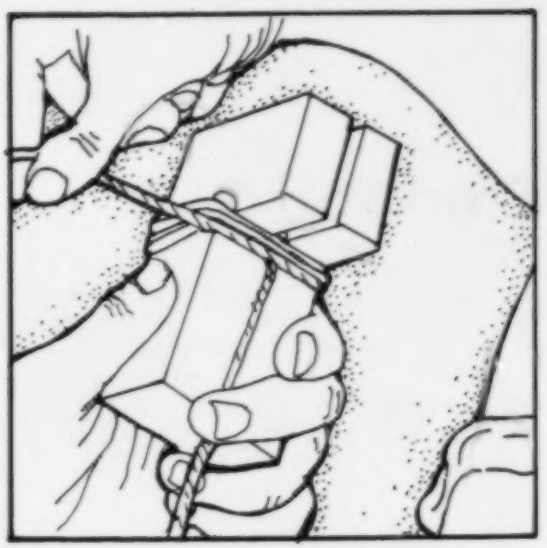
STEP 1 – Pick up one line block with your left hand. Hold the line block in your left hand with the groove in the block turned upward and the small end of the block turned toward your body.



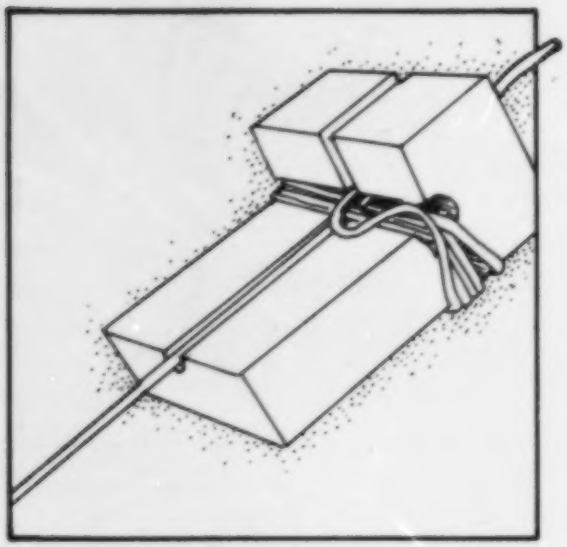
STEP 2 – With the end of the line in your right hand, slide the line through the groove in the line block. Pull the line through the groove until about one foot (.3048 m) of line is extended from the large end of the block.



STEP 3 – Hold the line and the line block with the left hand to keep the line from slipping. Take the end of the line with the right hand. Pull down and toward your body.



STEP 4 – Then wrap the line over the center of the line block three times very tightly.



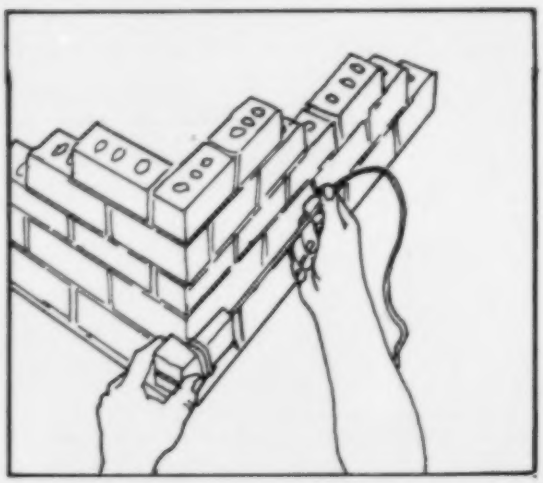
STEP 5 – On the fourth time around the block, pull the end of the line through the groove to the right on the largest part of the line block.

Check Point

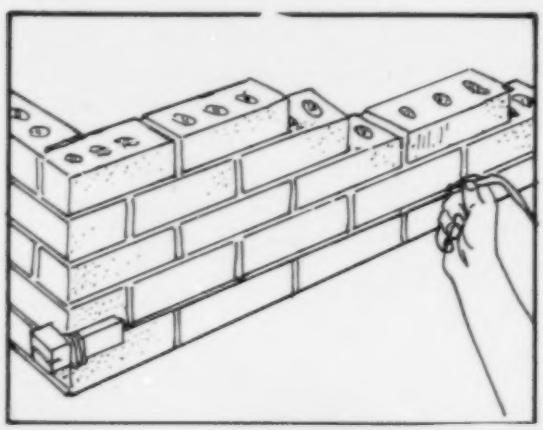
Hold the line block in the left hand. Catch the long part of the line and give it a hard pull. If the line does not slip, it is attached to the line block correctly. If the line does slip, take the line off the block and follow the steps again. If you need help, call your instructor. Use the same procedure for the other line block.

Instructional Objective XV

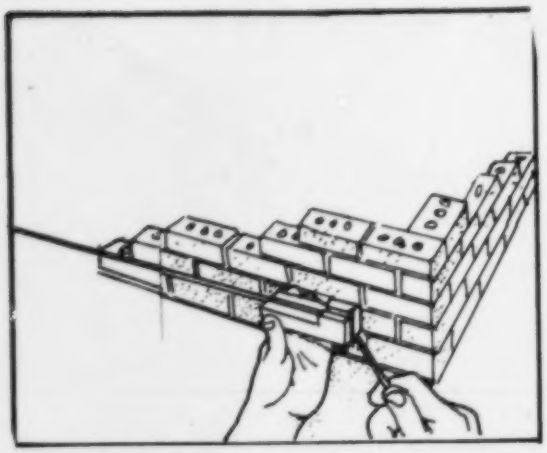
With one line block already attached to the line, the student will stretch the line and attach the second line block to the line at the proper place and hang the line on the top of the first course of brick.



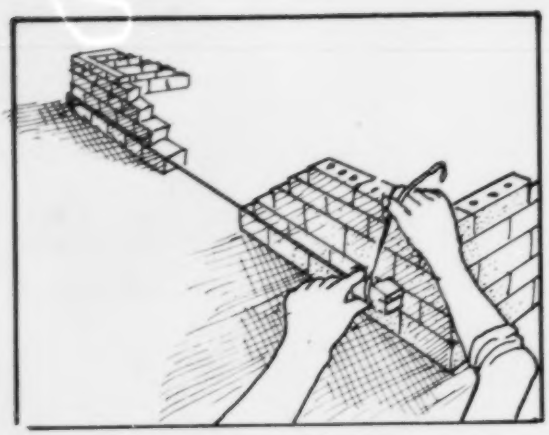
STEP 1 – Holding the first line block with the left hand, place the block on the left side of the corner.



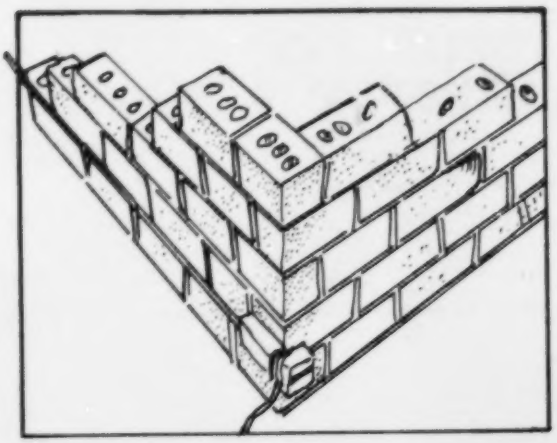
STEP 2– Hold the line tight with the right hand. Release the first line block. The first line block will not fall if the line is kept tight. Slide your right hand along the line toward the right side of the corner. Be sure to keep line tight as you slide your right hand along the line. Stop your right hand when it reaches the right corner.



STEP 3 – Make sure the line is kept tight at all times. Attach the second line block to the line at the point of the line that measures to the right side of the corner. The line block is attached by sliding the line through the groove in the block just as the first block was attached. Make sure that the small end of the line block is heading toward the center of the wall.



STEP 4 – The excess line should be wrapped around the line block with the right hand at the center of the line block. You will need to hold the line and the line block with the left hand while wrapping the excess line with the right hand.



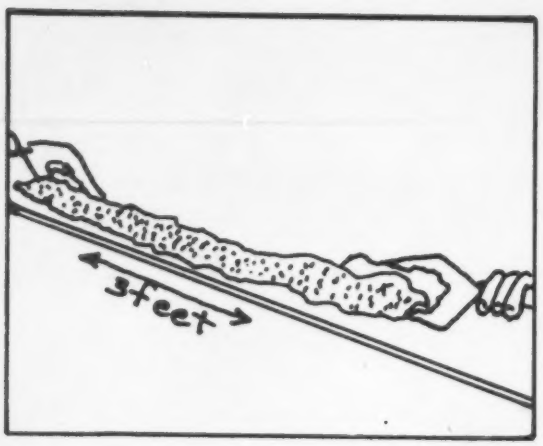
STEP 5 – Attach the second line block to the right corner on top of the first course.

Check Point

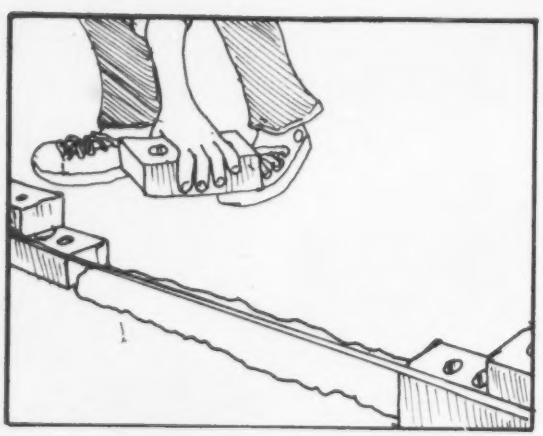
Check to make sure that the line is tight enough to keep the line blocks from falling.

Instructional Objective XVI

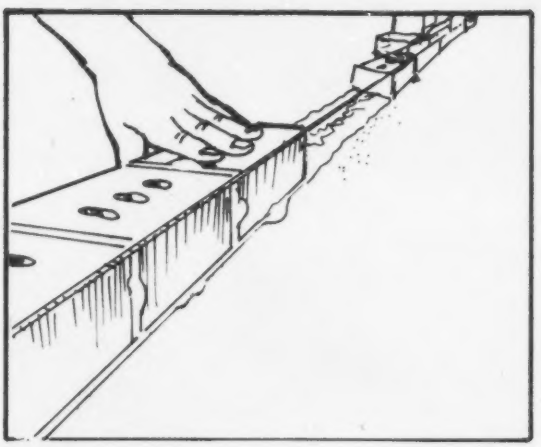
Each pair of students will construct a running bond wall section 5 courses high.



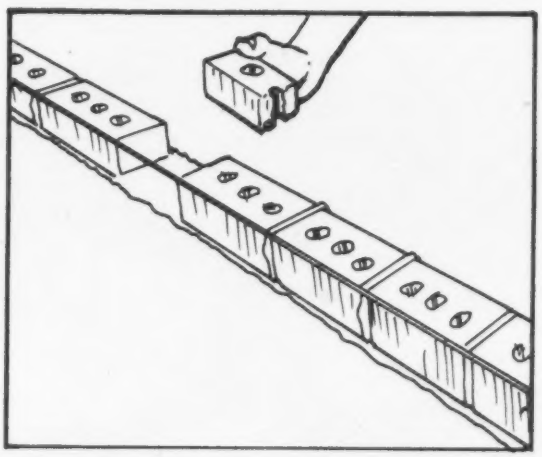
STEP 1 – Each student working toward the center of the wall will spread a bed of mortar 3 feet (.914 m) long.



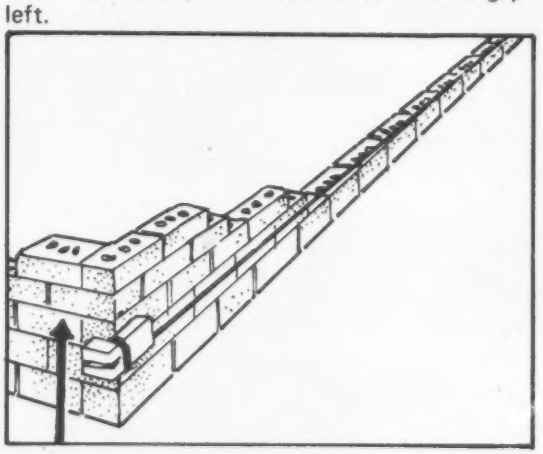
STEP 2 – Lay brick to the line. This is completed by buttering a brick.



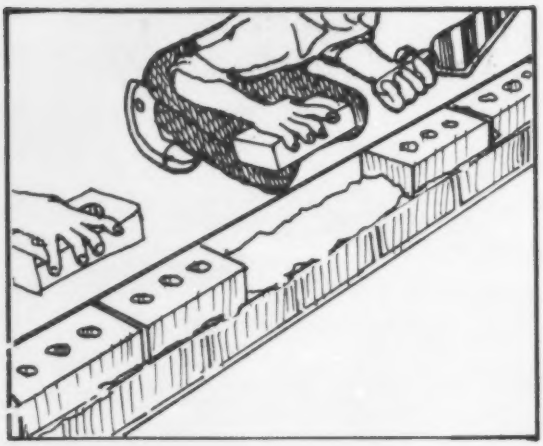
STEP 3 – Place it on the bed of mortar pushing it to the mason's line so it almost touches it.



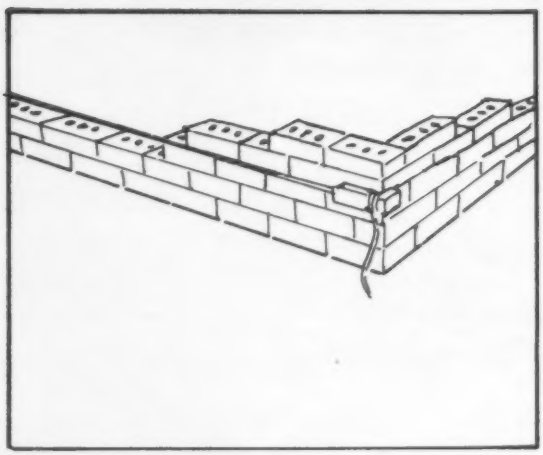
STEP 4 – Repeat these 3 steps until each student's work meets. If the bricks do not work out evenly cut a bat to fit the size gap left.



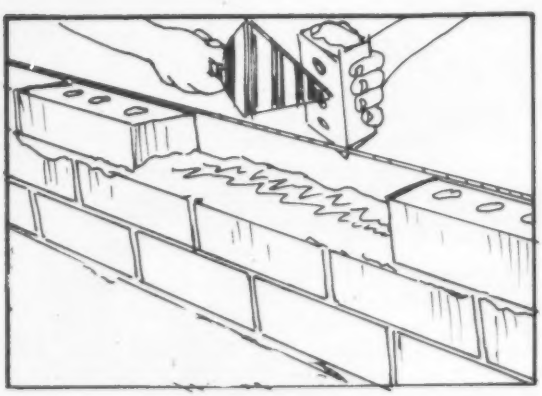
STEP 5 – Move both line blocks to the top of the second course.



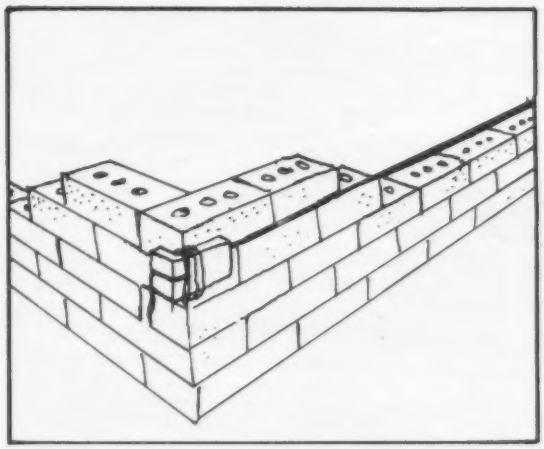
STEP 6 – Repeat steps 1–4.



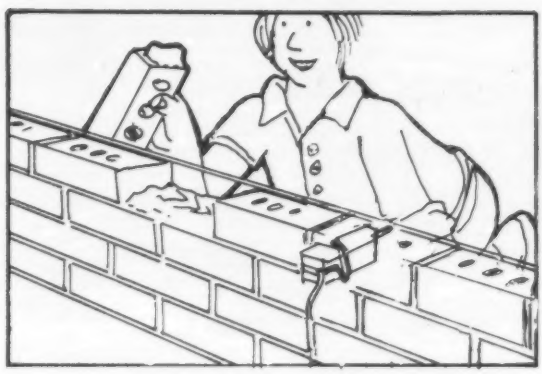
STEP 7 – Move the line blocks to the top of the third course.



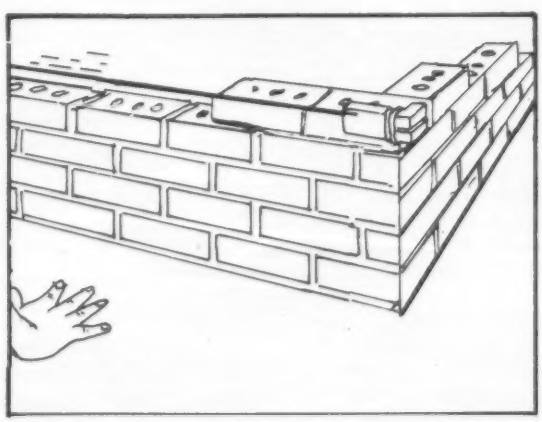
STEP 8 – Repeat steps 1–4.



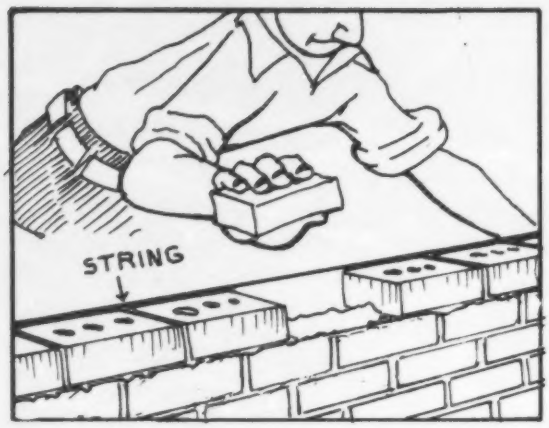
STEP 9 – Move the line blocks to the top of the fourth course.



STEP 10 – Repeat steps 1–4.



STEP 11 – Move the line blocks to the top of the fifth course.



STEP 12 – Repeat steps 1–4.

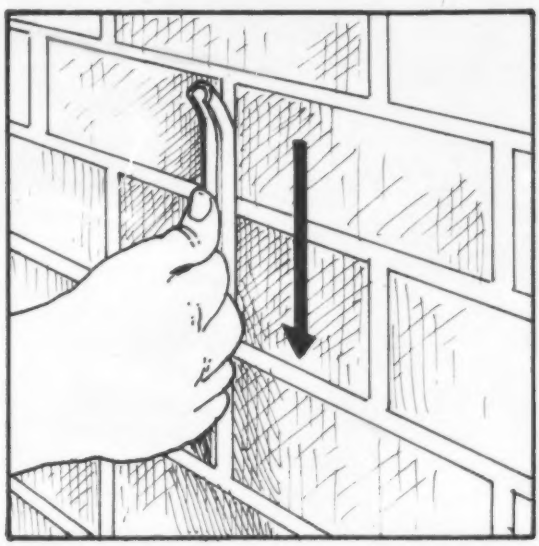
Check Point

Are all the courses even? Have your instructor inspect your completed work.

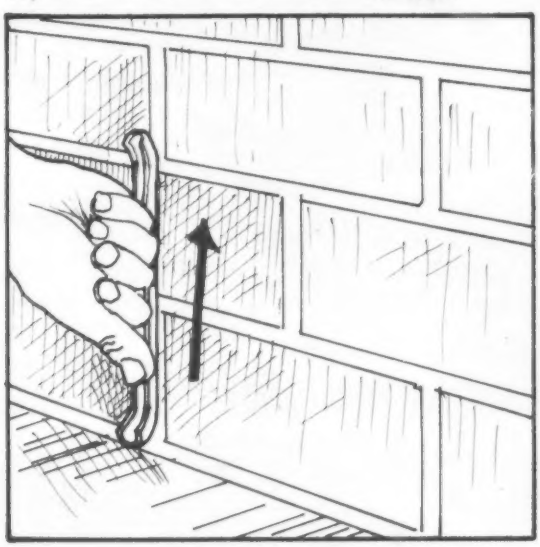
Instructional Objective XVII

The student will operate the concave jointer correctly.

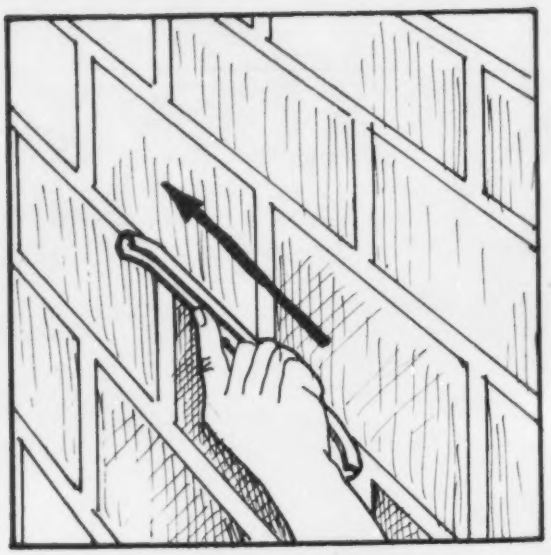
The head joints must be jointed before the bed joints. Head joints are vertical and bed joints are horizontal.



STEP 1 – The head joints on the top course must be jointed from the top down (from the top of the wall to the center of the wall).



STEP 2 – The head joints at the bottom of the wall should be jointed upward (from the bottom to the center of the wall).



STEP 3 – Joint the bed joints with a pulling motion, starting at the end of the wall and jointing toward the center of the wall.

STEP 4 – Brush off finished work.

Check Point

Step back about two steps and inspect your work.

Are all the mortar joints jointed straight and smoothly? Ask your instructor to check your work.

861.131-010 BRICKLAYER SUPERVISOR (const.)

Supervises and coordinates activities of workers engaged in laying brick, tile, cinderblock, and other materials to construct or repair structures, such as walls, arches, sewers, and partitions: Assigns workers to specific duties. Inspects work in progress to determine conformance to specifications. Trains new workers in use of handtools. May supervise workers engaged in laying only tile, and be designated TILE SETTER SUPERVISOR (const.). Performs duties as described under SUPERVISOR (any ind.).

861.381-014 BRICKLAYER (brick & tile) kiln repairer.

Repairs and rebuilds tunnel, periodic, and shuttle kilns used to burn tile, brick, and sewer pipe: Examines kilns after burning cycles to determine need for repair. Lays firebrick to construct casing walls, flues, feather walls, and burner wickets, using mortar, trowels, plumbobs, hammers, and brick. Spreads plastic refractories over exposed brickwork to protect against deterioration by heat. Lays brick flooring in periodic kilns. May be designated according to type of kiln repaired as TUNNEL-KILN REPAIRER (brick & tile; pottery & porc.).

861.381-018 BRICKLAYER (const.)

Lays building materials, such as brick, structural tile, and concrete cinder, glass, gypsum, and terra cotta block (except stone) to construct or repair walls, partitions, arches, sewers, and other structures: Measures distance from reference points and marks guidelines on working surface to lay out work. Spreads soft bed (layer) of mortar that serves as base and binder for block, using trowel. Applies mortar to end of block and positions block in mortar bed. Taps block with trowel to level, aline, and embed in mortar, allowing specified thickness of joint. Removes excess mortar from face of block, using trowel. Finishes mortar between brick with pointing tool or trowel. Breaks bricks to fit spaces too small for whole brick, using edge of trowel or brick hammer. Determines vertical and horizontal alinement of courses, using plumb bob, gageline (tightly stretched cord), and level. Fastens brick or terra cotta veneer to face of structures, with tie wires embedded in mortar between bricks, or in anchor holes in veneer brick. May weld metal parts to steel structural members. May apply plaster to walls and ceiling, using trowel, to complete repair work [PLASTERER (const.)]. May be designated according to material used as CINDER-BLOCK MASON (const.); CONCRETE-BLOCK MASON (const.); TERRA- COTTA MASON (const.); or work performed as BRICKLAYER, MAINTENANCE (any ind.). When specializing in construction of specified structures is designated according to specialty as BRICKLAYER, SEWER (const.); CHIMNEY BUILDER, BRICK (const.); Additional titles: BLOCK SETTER, GYPSUM (const.); HOLLOW-TILE-PARTITION ERECTOR (const.); PLASTER-BLOCK LAYER (const.); SILO ERECTOR (const.).

861.381-026 BRICKLAYER, FIREBRICK AND REFRACTORY TILE (const.) brickmason.

Lays firebrick and refractory tile to build, rebuild, reline, or patch high-temperature or heating equipment, such as boilers, ovens, furnaces, converters, cupolas, ladles, and soaking pits, according to job orders and blueprints: Lays out work, using chalklines, plumbbobs, tapes, squares, and levels; Calculates angles and courses for building walls, arches, columns, corners, and bottoms. Removes burned or damaged brick and cleans surface of setting, using sledge hammer, pry bar, pneumatic chipping gun, scraper, and wire brush. Cuts brick to size, using brick hammer or powered abrasive saw. Spreads fire-clay mortar over brick with trowel and lays brick in place. Spreads or sprays refractories over exposed bricks to protect them against deterioration by heat, using trowel or spray gun. Positions or bends special frame or hanger over casings to lay arches. Cuts, notches, or drills openings to

provide outlets, pyrometer mountings, brackets, and heating elements, using handtools. Patches or replaces firebrick linings of ladles and furnace tap holes. Constructs refractory forms for controlling quantity and flow of molten materials from furnace to rolling machines. May replace bolts, brackets, and heating elements, repair coke oven doors, weld cracks or holes in shell, or perform other repairs. May pack insulation, such as asbestos, into shells and frames, to insulate heating equipment, such as furnaces, boilers, and ovens. May be designated according to structure worked on as BESSEMER-BOTTOM MAKER (iron & steel); COKE-OVEN MASON (coke prod.); FURNACE MASON (const.); LIP-AND-GATE BUILDER (glass mfg.); OPEN-HEARTH DOOR-LINER (iron & steel) VESSEL LINER (iron & steel). When specializing in repair and replacement of firebrick and refractory tile in casings or linings of equipment is designated FIREBRICK-AND-REFRACTORY TILE REPAIRER (const.).